

FUNDING PROPOSAL TO THE GREEN CLIMATE FUND
CLIMATE CHANGE: THE NEW EVOLUTIONARY CHALLENGE
FOR THE GALAPAGOS

FEASIBILITY DOCUMENT

**Education, communication, and community mobilization for climate
action**



June 2021

Cite:

Marquez L., Narvaez M., Loose A., Bustamante S., Chiriboga R., Vallejo M., (2021).
Education, communication, and community mobilization for climate action.
Ecology Project International, World Wildlife Fund. pp. 115

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1. CONCEPTUAL FRAMEWORK

The threats posed by climate change will have impacts on human security, health and well-being, especially upon that of children and young people, as well upon other populations that are in situations of vulnerability. In a survey regarding the impacts of climate change carried out on more than 400 young people in Ecuador (Ureport Ecuador, 2019), the results obtained were that three out of every four young people have felt the effects of climate change. 78% believe that climate change is a very serious problem; and 75% have been affected through droughts, heat and cold waves, diseases, and evidenced a lower productivity on the land.

However, the impacts of climate change on children and young people are not only evident within their physical environments but are also being evidenced in problems related to mental health, such as stress, sadness and overwhelm. Corner *et al.* 2015, reported that climate change is a major cause for concern and in some cases “associated with feelings of anxiety, stress and despair”. Evidence suggests that children may be overwhelmed by the consequences of climate change and that young people are increasingly concerned about this issue (Poirier, 2019).

Young people and older adults, independently, have a reduced capacity to cope with the effects of climate change. In addition, women, ethnic minorities and people with disabilities, among other groups with vulnerabilities, are more exposed to the effects of climate change, while at the same time they have less economic, political and legal influence, and a limited capacity to get involved and that their needs be considered within the climate decision-making processes (UNESCO and UNFCCC, 2016).

Here lies the importance of including an intergenerational approach and the perspective of those in situations of greatest vulnerability. To empower and involve people of all ages, from different social contexts, and with other challenges associated with their vulnerabilities, integrating their needs, experiences, knowledge and skills, in order to make responses to climate change more effective and sustainable over time.

The Galapagos islands is the best-preserved tropical archipelago in the world, but its rich biodiversity is at risk if current social and economic trends and practices continue. Long term protection of the islands will be possible only when local residents become more conscious about conservation (Roman et al., 2015). This is possible only when residents possess the knowledge, skills, values and desire to pursue lifestyles and livelihoods that are consistent with protecting the fragile Galapagos environment. Roman *et al.* 2015, highlight the importance of education as an essential avenue towards this end. He also mentioned that a progressive educational philosophy, an improved curriculum, well trained teachers, innovative learning opportunities, and greater community wide involvement have the potential to ensure that Galapagos youth are engaged and grow to lead exceptional stewardship of Galapagos sustainability.

It is of great importance for Galapagos citizens to be aware of climate impacts and be prepared to adapt to it. Acquiring the knowledge, skills, values and attitudes Galapagos residents need, will prepare them to build a green, low emissions and climate-resilient future, while achieving sustainable development in three dimensions: economical, environmental and societal.

2. PROBLEM CONTEXT AND ANALYSES

The path to sustainable development will require a profound transformation in the way we think and act. To create a more sustainable world and address issues related to sustainability, like climate change, citizens need knowledge, skills, values, and attitudes that empower them to contribute to the sustainable development of their communities and become agents of change.

Children and youth of today will become tomorrow's citizens with voting power, consumers with purchasing power, as well as decision makers. Considering that the effects of climate change will be even more evident in the coming years, and that future generations will potentially be more vulnerable to these impacts, children and youth are currently underrepresented within the decision-making processes regarding climate action (UNESCO and UNFCCC, 2016). This situation must be reversed. Current and future generations must be prepared with knowledge, skills, and abilities to actively participate in decision-making processes regarding climate action, to be able to contribute to mitigation and to better adapt to climate change.

Despite global efforts to engage citizens as key actors for climate action, communities and societies continue to be vulnerable to climate change impacts. This is a clear indicator that greater collaboration is needed between sectors and actors at different levels, regarding the continuous and permanent efforts to face the threats posed by climate change (European Commission, 2020). But above all, it is an indicator that it is essential to direct our efforts to deeply understand factors from social, economic, political and cultural contexts, as well as the cognitive processes and individual experiences, which positively influence or hinder effective and lasting climate action, both at individual and collective levels.

Climate change beyond being a physical phenomenon resulting from human activity with effects on the environment and people, it is also a threat with multiple and complex social dimensions. The various consequences of climate change will affect, in one way or

another, almost all areas of contemporary life. Therefore, there is no single solution: this complex problem must be approached from all fronts and dimensions to ensure positive, enduring social change.

When tackling climate change, it is imperative to consider the importance of promoting enduring change among civil society. Research on social climate science takes into consideration the social aspects which can enable or prevent changes in attitudes and behaviors, and most importantly, it analyzes how to ensure those changes prevail throughout time, beyond a specific intervention and independently from a certain information context (Goldberg et al., 2020).

In the past two decades, researchers have tried to understand why the problem of climate change is failing to motivate people to act. Evidence from psychology and behavioral sciences shows that there are processes that are rooted in our minds, often in an unconscious manner, and related to our emotions and values. An example of the above is the sense of distance that many feel when faced with this global problem, which hinders individuals and groups from taking action against climate change (Armstrong et al., 2018). Similarly, recognizing that climate change is a problem and feeling negative emotions towards this problem, is not enough to address it. Intense motivation and useful specific knowledge about the solutions are fundamental to promote pro-climate affect and cognition and thus influence upon behaviors (Goldberg et al., 2020). However, it is necessary to connect these positive attitudes with concrete climate action, by promoting the development of knowledge and skills for the adoption of mitigation and adaptation actions, at all levels and through the different sectors of society.

To promote climate action, it is necessary to understand the experiences, values, attitudes, and other contextual and personal factors that influence decision-making and the behavior of different individuals and groups. Social identity affects attitudes towards climate change; the perception of the distance to which people perceive climate change (Armstrong et al., 2018), among other aspects, has an impact on the way in which people get involved and effectively act upon issues regarding climate change.

In this sense, a deep involvement with climate change has been proven as a fundamental feature to promote enduring changes. Extensive research suggests that “leveraging deep engagement, underlying mental models, and social norms” is crucial to address climate change and generate long lasting social change (Goldberg et al., 2020). This implies thinking and actively discussing climate change among close members, promoting mental models that allow you to understand the issue more easily, to reflect upon and feel motivated to take action in the face of climate change, and the reinforcement of pro-climate social norms that can be internalized with time (Goldberg et al., 2020).

To achieve an active and lasting commitment from citizens to effectively address climate change, enabling conditions such as climate-literacy, self and collective efficacy, promotion of positive dialogues (Armstrong et al., 2018) profound engagement, mental models, and pro-climate social norms (Goldberg et al., 2020) are necessary and can be effectively driven from formal and non-formal education, communications and community outreach and mobilization processes.

2.1. The role of education and communication to achieve climate action.

Transformative education and effective communication are key strategies to achieve the long-term sustainability of efforts to mitigate and adapt to climate change. In the short term, these are fundamental tools and means to promote the above-mentioned enabling conditions, to act on climate change.

However, educating and communicating about climate change is challenging, as climate change concepts are complex (Sharma, 2017). Cognitive constraints are seen to be the biggest obstacles working against the adoption of mitigation and adaptation behaviors (Pruneau, Khattabi & Demers, 2008). The lack of knowledge about the causes, impacts, and solutions of climate change is the most easily identifiable individual barrier to an active participation in climate action. However, strengthening knowledge alone is not enough, climate change education and communication therefore emphasis on the need to promote climate literacy, pro-climate attitudes, and most importantly, the individual and

collective agency and opportunities to translate those into climate action (Armstrong et al., 2018).

The Potsdam Institute on Climate Impact Research (PIK) has described six social tipping interventions that can offset climate change (Otto et al., 2020). One of them is "to strengthen education and action for the climate". The authors advocate for a greater integration of environmental and climate-conscious lifestyle issues into the school curriculum, as well as to highlight that high-quality education promotes norms and values that can quickly lead to behavioral changes in people and thus their environment.

Formal, informal and non-formal education is seen as an important way to develop within the present and future generations the knowledge and skills of mitigation, adaptation and resilience to climate change (Sharma, 2017). To prepare children, young people, and adults for individual or collective action on climate change can be achieved from multiple models, theories, educational approaches and methodologies. Some of the most relevant include education for sustainable development, lifelong learning, place-based education, experiential education, and education for global competence.

Education for Sustainable Development (ESD) is a holistic and transformative education approach, as it guides learning contents and outcomes, pedagogy and the learning environment, and the type of social transformation that must be endorsed. Consequently, ESD not only integrates content such as climate change, poverty and sustainable consumption into school curricula, but also creates interactive and learner-centered teaching and learning methodologies. ESD seeks a transformative and action-oriented pedagogy, and is characterized by aspects such as self-taught learning, participation and collaboration, orientation towards problems, inter and trans-disciplinarity, and the creation of links between formal and non-formal learning. Only the mentioned pedagogical approaches can make possible the development of the key competences necessary to promote sustainable development (UNESCO, 2017).

The ESD has received increasing international recognition as an approach to empowering people to change their way of thinking, and work committed to build a sustainable future. In this sense, ESD is crucial to achieve this type of development and thus empower new generations to make conscious decisions and act responsibly for the sake of environmental integrity, economic viability and a just society for present and future generations (UNESCO, 2017). Therefore, ESD is an essential factor in the global fight against climate change. The knowledge related to this phenomenon helps young people to understand and address the consequences of global warming, encourages them to modify their behaviors and helps them adapt to what is already a global emergency.

On the other hand, communication plays a powerful role in addressing barriers and influencing the demand for and adoption of climate change mitigation and adaptation practices.

Worldwide, there is a paradigm shift from awareness-raising, information, and sporadic communication, towards evidence-based behavior change communication strategies. This change has occurred, with a greater understanding of how unconscious mental processes, social and cultural contexts, and social norms, have had an influence upon human behavior, among other aspects. Therefore, it has been evidenced that comprehensive approaches to communication for climate change are necessary for achieving the desired changes (USAID, 2013).

The best practices within communication for climate change and other social and environmental issues show that communication is most effective when it is based upon research and guided by behavioral science theories. When it focuses upon multiple levels of change (individual, family, community, and societal) within an enabling surrounding environment, as well when it is combined with improvements regarding processes, services or goods that make the environment facilitate decisions and changes. And finally, when it generates the involvement of communities through participatory approaches (USAID, 2013).

Formal and non-formal education, communication and outreach processes are key in accelerating solutions and in increasing the ambition for climate action. These processes carried out in a systematic, comprehensive, and strategic manner, can promote a better understanding of climate change, the attitudes necessary to act, and the skills and opportunities to face climate change and its effects.

In this sense, both are strategic and complementary processes that, by integrating the appropriate approaches, tactics, and tools, allow an increase of their potential, and thus they can achieve significant impacts to promote climate action at different levels. These levels range from individual decisions, to collective action at the local level and advocacy at the national or international levels (Armstrong et al., 2018).

Some of the expected impacts outlined by the research carried out around climate change communication and education include climate literacy, pro-climate attitudes, behavior change, self and collective efficacy, social capital, and collective action (Armstrong et al., 2018). These aspects, in a joint and interrelated manner, are essential to design and implement measures for the adaptation to and mitigation of climate change, as well as to achieve the goal of having more fair, sustainable, healthy, and climate-resilient societies.

2.2. International frameworks for mobilizing society towards climate action.

With the goal of mobilizing all of society towards an ambitious climate action, the following international frameworks recognize the crucial role that education, communications, public access to information, and engagement opportunities play in increasing the capacity of individuals and communities to counteract climate change and to adapt to its impacts. As all of these comprehensive and complementary aspects help to create enabling conditions for the communities to undertake climate action and sustain long-term efforts, through all dimensions of sustainable development.

The Paris Climate Change Agreement and the 2030 Agenda for Sustainable Development “unanimously recognize the importance of education and public awareness in the drive towards sustainable development” (UNFCCC, 2018).

The Action for Climate Empowerment (ACE) is the name to refer to article 6 of the United Nations Framework Convention on Climate Change and article 12 of the Paris Agreement. ACE has six interdependent and interrelated elements: education, training, public awareness, public participation, public access to information, and international cooperation. They all play a fundamental role in accelerating adaptation and mitigation actions regarding climate change (European Commission, 2020).

The implementation of these six areas of the ACE has been identified as a key factor to increase the understanding and an active participation of the population in the search and implementation of solutions to the complex challenges posed by climate change. The objectives and outcomes of some of these areas are described below. On the one hand, education enables people to understand the causes and consequences of climate change, so that they can make informed decisions. On the other, training provides the technical with skills and advanced knowledge, both necessary to support the transition to green economies and thus sustainable societies that are resilient to the climate. While awareness-raising seeks to involve individuals and communities in a common effort necessary to carry out national and international climate change policies and measures. Finally, to guarantee public participation in decision - making and access to information giving people tools and opportunities to play a more active role in the fight against climate change (UNESCO and UNFCCC, 2016).

Moreover, regarding education, the ACE refers to this element as a process that seeks to achieve deep and long-term changes in understanding, particularly among young people. This area includes curriculum development, training of trainers and educators, and appropriate pedagogical approaches. The results of a successful education program would be, in the medium and long term, a population with a deep awareness of climate challenges, which would lead to greater commitment and action at the national level

(European Commission, 2020). On the other hand, the ACE emphasizes the need to create a successful public awareness and outreach program that influences upon behavior changes, through systematic and targeted communications (UNESCO and UNFCCC, 2016).

Article 12 of the Paris Agreement establishes that all parties must cooperate in the adoption of the corresponding measures to improve these six elements regarding climate change. At the United Nations Conference on Climate Change (COP 18) held in Qatar in 2012, countries adopted the ACE Doha work program (2012-2020), “which establishes a flexible framework for the implementation of the ACE according to national needs and circumstances” (European Commission, 2020).

In this sense, member states, including Ecuador, have indicated a manifest interest in advancing in the empowerment of the population in relation to climate change, and therefore in the incorporation of the ACE in policies, plans, strategies, and programs at the national level. From the National Climate Change Plans, the Adaptation Plans, in the NDCs, and in relation to the competencies of the National Climate Change Offices on ACE, with competencies, components, specific and clear commitments in ACE. The networks of universities or individual universities, NGOs, citizen platforms, among other civil society actors, also constitute strategic allies in the development and implementation of ACE strategies.

The relevance of the ACE is reflected in other international frameworks such as the Sustainable Development Goals (SDGs, 2015) and the Global Action Program for Education for Sustainable Development (GAP on ESD, 2014).

Education on climate change is part of UNESCO's program on Education for Sustainable Development (ESD). In 2014, UNESCO launched the Global Action Program on ESD, the official follow-up to the United Nations Decade of ESD, focused on climate change. It seeks to support countries to mainstream climate change education into their education systems and to help people understand the causes and impact of global warming. The

UNESCO aims to make climate change education a more central and visible element of the international response to climate change. In 2030, the aim is to ensure that all students acquire the theoretical and practical knowledge necessary to promote sustainable development.

The UN, in its goal of reducing poverty by 2030, places ESD, target 4.7 of the Sustainable Development Goal (SDG) 4, as the center of this transformation and must be incorporated into the education policies, school curriculums, as well as in the training programs for teachers.

The United Nations Framework Convention on Climate Change (UNFCCC) works with UNESCO and an alliance that includes other UN agencies under its Action for Climate Empowerment (ACE) programme, which liaises with an increasingly active network of government focal points. UNFCCC also works with youth and non-governmental partners in areas such as Technical and Vocational Education under the ACE umbrella.

2.3 National frameworks for mobilizing society towards climate action.

The international frameworks set out above have been embraced within different instruments at the national level, with the aim of advancing education, training, awareness-raising, and public information on climate change and sustainable development in countries.

A study developed by the European Commission regarding the advances of ACE in Latin America and Caribbean (2020), points out the situation of the countries with respect to their role in promoting the empowerment and involvement of the population to face climate change. This, regarding the policies, programs, institutions, and actions that have developed aspects of communication, education (formal and non-formal), training, and engagement with the population, and have a focus on climate change.

Some of the developments in Ecuador regarding the integration of these international frameworks into national instruments are mentioned below; prioritizing the work carried out by the Ministry of the Environment and Water (MAAE) and some civil society

organizations. As well as some of the needs and opportunities identified towards strengthening the design, planning, and implementation of ACE efforts are pointed out.

In Ecuador, the National Climate Change Strategy 2012-2025 (ENCC) considers a National Program of Awareness, Communication and Engagement that aims to implement communication strategies with all the actors related to climate change adaptation, mitigation, and impacts. Within this program, information and knowledge regarding climate change aimed to be managed and delivered through different communication and participation mechanisms regarding the type of audience.

The National Strategy facing Climate Change (ENCC) (*as its acronym in Spanish*) contemplates the creation and strengthening of conditions, which are a transversal axis conceived with the objective of creating in the country the necessary environment for the implementation of the strategy itself. Specifically with a view to overcoming the four main barriers related to the challenges posed by climate change: 1) Scarce information; 2) A limited involvement of the civil society, and of the public and private sectors; 3) Limited human and institutional capacities; and 4) Limited access to technology and financing (Ministry of the Environment and Water, 2017). As part of these axes, the creation of formal and non - formal education modules on climate change is proposed in order to promote the awareness and knowledge of Ecuadorians about the challenges of climate change.

While in the Nationally Determined Contribution (NDC) presented in 2019, under Title II, the design and promotion of training, education, sensitization, and awareness programs on climate change management is proposed. However, a specific formulation regarding actions on behalf of the ACE to meet the goals set out in the NDC and the commitments assumed before the Paris Agreement (European Commission, 2020) has not yet been identified.

Additionally, Ecuador is implementing the National Adaptation Plan Project (PLANACC) (*as its acronym in Spanish*) until 2022, which seeks to generate the enabling conditions

for the adequate management of adaptation to climate change in the country. Within which there is a component for the formation of institutional capacities, partners, and interested parties (both public and private sectors) to facilitate the integration of adaptation to climate change regarding the planning processes at the national, sectoral, territorial, and local levels.

The MAAE, in response to the constitutional mandate to guarantee the rights of nature, promoted in collaboration with the Ministry of Education (MINEDUC), the development of the National Strategy of Environmental Education for Sustainable Development 2017 2030 (ENEA) to contribute to climate and environmental literacy in Ecuador.

As a result of this, the "Tierra de Todos" Program was created, whose objectives are "to implement pedagogical and innovative environmental education methodologies with an affective, playful, practical, intercultural, holistic and interdisciplinary approach"; "to strengthen the National Curriculum with an environmental approach"; and to "implement good environmental practices within the national educational system". In addition, the TINI methodology was created and institutionalized for its implementation within educational centers, and a training program on environmental issues was executed for administrators and teachers. More than 100,000 teachers received a virtual course on Environmental Education, but the contents and its impact are not known in detail. One of the goals of the ENEA is to guide its implementation at the national and territorial levels through the formation of Local Consultative Councils for Environmental Education (CCLEA) (*as its acronym in Spanish*) in 23 provinces of the country. The CCLEAs have as their main responsibility, the development of a provincial environmental diagnosis, as well as the design and implementation of the Provincial Environmental Education Plan. However, these councils have only been created in the provinces of Carchi, Imbabura, Sucumbíos (2018), Esmeraldas (2019), and Pastaza (2020).

As well as, the establishment of an agreement to promote Education for Sustainable Development as a public policy, which focuses on strengthening the knowledge, skills, values and attitudes both individual and collective of the educational community, with

which it will be achieved more than 4 million students nationwide and around 200,000 teachers in the country (Ministry of the Environment and Water, 2020).

However, it is necessary that these policies, programs, and actions that incorporate ACE elements, be provided with support, means, resources, and inter-institutional coordination to strengthen efforts, and achieve a greater impact and sustainability in the long term. International cooperation and strategic alliances are key to guaranteeing this (European Commission, 2020).

By recognizing that we have reached a turning point in tackling climate change, it is key to involve all actors and levels of society in climate action. Despite existing efforts, current analyses show the need to increase efforts in empowering and engaging all the involved parties to become an active part in finding and implementing solutions for climate change.

2.4 Challenges regarding education and communication on climate change in Galapagos

Although there are existing enabling international and national frameworks to mobilize society towards climate action, there are also important challenges regarding education and communication aspects in Galapagos that must be addressed in order to ensure the resilience of the local community against the potential impacts of climate change.

- There is no comprehensive educational approach to climate change within the school-based educational system of Galapagos.
- Limited capacity (knowledge, skills, and pedagogical resources, and time) of teachers to effectively incorporate quality climate change learning experiences into their planning.
- Scarce experiential learning opportunities focused on climate literacy integrated into the formal education system, using place-based education and experiential education approaches.

- Technical education opportunities in Galapagos are not connected with local labor market demands and with youth interests, especially considering the needs, opportunities and challenges derived from climate change and post-Covid context.
- Nonexistent intersectoral coordination and articulation mechanisms, specifically regarding climate change education.
- General lack of accessible, timely, understandable and relevant information about climate change in Galapagos, is a contributing factor to poor climate change literacy among youth and community members and limited evidence-based decision making.
- Lack of behaviorally-informed climate change communication strategies and interventions.
- Lack of capacity of government officers to effectively integrate climate change aspects into existing communication, non-formal education and community outreach processes.
- Limited climate change immersive field-based and non-formal educational experiences for community members.

All of these challenges are fully described in the following Section 3, within the framework of each of the actions and sub activities that are proposed in this project in order to address them.

3. EDUCATION, COMMUNICATION AND MOBILIZATION (ECM) FOR CLIMATE CHANGE ACTIONS IN GALAPAGOS.

Drawing from the need of systemic change to tackle climate change, education, communication and community mobilization are key toward achieving climate action, and the broader goal of this Program.

In order to reduce the vulnerability of the Galapagos community to climate change, it is crucial to strengthen the resilience and adaptive capacity of children, young people, and adults with the necessary knowledge, skills, and attitudes, to empower them to assume a role as agents of change in their communities and thus contribute to the transformation of the Galapagos system towards a more sustainable, self-sufficient, and resilient one to climate change. In that sense, Galapagos provides unique opportunities to foster meaningful learning experiences on sustainability and climate change due to the exposure to real life situations demonstrating the fragility of its environmental systems.

In the short and medium terms, the education (formal and non-formal) and communication interventions proposed within the framework of this module will have an impact upon children, young people, and adults in regard to the development and strengthening of climate literacy, pro-climate attitudes, self and collective efficacy, and behavioral intentions to adopt mitigation and adaptation practices. These aspects are interrelated and complementary to each other, in order to finally achieve the empowerment and capacity of the local community of Galapagos for individual and collective climate action.

In the long term, these aspects will provide the enabling conditions in order to achieve positive social transformations at different levels, towards building resilience in Galapagos to climate change. These transformations will occur as long as different actors from different sectors of society adopt pro-environmental and pro-climate behaviors, and that these are maintained in the long term.

Table 1 summarizes outcomes and outputs expected for all proposed education (formal and non-formal), communication, and mobilization actions.

Table 1. Integrated activities, sub-activities and outputs of all ECM Actions.

Action 1: Strengthen the educational system of Galapagos to provide quality education to face climate change and promote sustainable development.		
Activities	Sub-activities	Deliverables/outputs
1.Strengthen the educational system of Galapagos to provide quality education to face climate change and promote sustainable development	1.1 Establish a Board of Education for Climate Change, to articulate the efforts carried out in Galapagos by different institutions and organizations.	-Institutionalize and systematize intersectoral efforts for climate action in the education system through a Board of Education for Climate Change (MECC) created. -An Agenda for Climate Change Education at a provincial level is developed and implemented.
	1.2 Integrate quality climate change education into the existing professional development program of the Ministry of Education in Galapagos for education leaders and teachers, through intensive training and the development of pedagogical resources to implement the contextualized curriculum.	-Training modules regarding climate change are designed and implemented for teachers, through intensive training of pedagogical leaders and Education Institutes of the ESG Program. -Pedagogical resources about climate change are created to implement the contextualized curriculum of Galapagos.
	1.3 Implement climate-friendly practices in schools to promote pro-climate attitudes and climate literacy.	-Pilot projects implemented in a four-year period at different Galapagos educational establishments focused on adaptation and mitigation to climate change. -Climate-friendly projects replicated successfully at Galapagos educational institutions.
	1.4 Implement community engagement and experiential learning programs for students of basic education and high school, connecting to mitigation and adaptation initiatives promoted by the Program.	-Immersive and experiential educational experiences on climate change are designed and implemented every year into the educational system. -Trained teachers co-facilitate real place-based education and experiential learning opportunities on climate change with students.

	1.5 Design and implement technical education programs for youth, to address the labor markets local demand in areas related to Galapagos tourism, agriculture, and fisheries value chain, within a climate change and post-COVID-19 context.	<ul style="list-style-type: none"> -Two technical high-school degrees in sustainable food value chains designed with a strong focus upon sustainability and climate change, and implemented in close collaboration with the Ministry of Education. -Two third-level technical degrees sustainable food value chains designed and implemented, with strong focus upon sustainability and climate change, and implemented in close collaboration with the USFQ
Action 2: Strengthen knowledge and foster engagement of public and key stakeholders on climate change impacts and solutions.		
2.Strengthen knowledge and foster engagement of public and key stakeholders on climate change impacts and solutions.	2.1 Develop a knowledge management and outreach digital platform that makes updated and relevant information, knowledge, lessons, and resources regarding climate change in the Galapagos, understandable and accessible to the public and key stakeholders.	<ul style="list-style-type: none"> -A climate change knowledge management and outreach digital platform that gathers available and relevant information on climate change in Galapagos, is developed. -A communication and outreach plan, linked to the platform, delivers general communication and education climate change-related materials to key stakeholders.
	2.2 Develop and implement a communication strategy based on innovative approaches and methods, to strengthen knowledge and foster commitment for the adoption of climate change mitigation and adaptation measures.	<ul style="list-style-type: none"> -A behavioral-informed and comprehensive climate change strategy is designed and implemented, integrating innovative and effective communication approaches, methods and tools. -A cross-cutting content plan will be developed through a variety of graphic, audiovisual and written communication resources, and disseminated through a multi-channel and multi-platform approach.
	2.3 Develop a behavioral change campaign aimed at consumers of the food system in Galapagos, focusing on those behaviors that can be effectively addressed by communications interventions.	<ul style="list-style-type: none"> -A Behavioral Insight Analysis focused on food consumers in Galapagos, is designed and carried out. -A social and behavioral change campaign focused on consumers regarding fisheries, agriculture and

		tourism value chains in Galapagos is designed and implemented in the four populated islands.
Action 3: Facilitate non-formal education and mobilization opportunities to encourage youth and local community empowerment on climate action.		
3.Facilitate non-formal education and mobilization opportunities to encourage youth and local community empowerment on climate action.	3.1 Develop a capacity building program for non-formal facilitators (government officials, NGOs, community leaders) to increase their understanding and practical application of climate change approach into communication, community outreach and non-formal education interventions.	<p>-A training program for facilitators of communication, non-formal education and mobilization processes on climate change through a project-based learning methodology, is designed and implemented on Santa Cruz and San Cristobal Islands.</p> <p>-A training-of-trainers strategy for the replication and scaling of the program, is developed and implemented in the four populated islands.</p>
	3.2 Develop immersive field-based and non-formal educational experiences for different audiences, to connect the local community with the natural environment and climate change mitigation and adaptation initiatives.	-At least two immersive field-based experiences regarding climate change, designed and conducted every year in each inhabited island.
	3.3 Create a permanent working platform that brings together existing organized groups and citizens towards collective climate action, through capacity building and the implementation of pilot youth and community-based projects.	<p>-Citizens of the four populated islands, have been trained and are part of the working platform on collective climate action.</p> <p>-Independent youth and community-based projects or initiatives are initiated and have been successfully completed, or are still under development.</p> <p>-Local community leaders have been trained as facilitators of the working platform and lead their own independent groups towards collective climate action, through on the ground projects and initiatives.</p>

3.1 ECM Action 1. Strengthen the educational system of Galapagos to provide quality education to face climate change and promote sustainable development.

The objective of this action is to integrate a comprehensive educational approach to climate change within the formal educational system of Galapagos (basic education, high-school, and third-level education), that includes innovative and pertinent education models, approaches, methodologies and tools. This will support the Galapagos educational system regarding the provision of quality education in order to face climate change and to promote sustainable development.

Through Education for Sustainable Development (EDS), experiential and place-based education approaches, amongst others, this action aims to promote and sustain the development of significant teaching-learning experiences to strengthen knowledge, attitudes and skills of children and youth to be better prepared to face climate change and contribute to a resilient and self-sufficient Galapagos system.

Climate change education for sustainable development in the formal field can happen in many ways, and this action will take this perspective into consideration throughout the five sub-activities, which will be further described below.

In 2019, the Ministry of Education of Ecuador promote the creation of the National Agreement for Education, which is a citizen initiative that promotes the participation of society in the adoption of public policies in education, based on dialogue and coordinated work (described further below in Section 3.1.1). With this background, in march of 2020, the Galapagos Agreement for Education (AGE) was created, involving the participation of all local actors of the province to determine the necessities for improvement of public policies regarding education on the islands. Aware of the support that teachers require today more than ever, and of the desire of the island community for a quality contextualized education, the Governing Council of the Galapagos Special Regime, the Galapagos District Directorate of Education and the Galapagos Agreement for Education, within the framework of a cooperation agreement with the Ministry of Education and the Education for Sustainability Project: Invasive Species, the contextualization of the

national curriculum in Galapagos has been promoted, being a transcendental process that will affect the sustainable future of the islands.

The contextualized curriculum for the Galapagos, paired with pertinent professional development opportunities, will help teachers to integrate climate change into their schooling. These activities will focus on helping teachers develop a strong understanding of 1) the structure and elements of the curriculum in the different sublevels of the education system, and their possibilities of implementation; and 2) how to integrate climate change related topics within a local and global context in their classrooms.

Teachers play a critical role in educating future generations about global climate change (Shiyu et al. 2015). Educating teachers about the challenges of incorporating climate change related topics into modern classrooms is a complex and multifaceted endeavor. Breaking patterns and learning new behaviors requires ongoing training and preparation as well as support, capacity building and ongoing monitoring (OECD, 2010). It is important to strengthen teachers' capacities on climate literacy as a strategy to transfer climate change knowledge and skills to students and new generations of teachers, which will benefit education in the Galapagos, where there is a lack of trained teachers on climate literacy topics.

Teacher knowledge and skills have been a limitation in teaching climate change. Cross curricular activities are very limited in the national curriculum and non-existent for Galapagos. Teacher's methodology is still theoretical-oriented and teacher-based instead of project-oriented and student-based. Therefore, teachers need to update their teaching skills in order to transfer their knowledge to students more efficiently.

There are limited professional development programs and resources focused on climate change literacy in Galapagos. These limited resources and professional development opportunities have limited the training efforts about climate change for teachers in the province. Therefore, local schools lack capable teachers able to transfer this information to the next generation of leaders.

The contextualized curriculum for Galapagos will open a window to teachers and educational institutions for the development of community outreach programs and the design of project-based learning and experiential lessons regarding climate change. currently, these are almost non-existent within the formal sphere, but their implementation will only be possible through collaborative efforts between the schools, the community, and public and private institutions working on sustainability topics.

Historically, high level education in Galapagos has faced many challenges regarding quality, pertinence and availability (described further below in Section 3.1.1). Being one of the most important, the gap between the labor market demand and the professionalization of Galapagos permanent residents) that needs to be resolved with a climate change resilience perspective. Especially considering the highly tourism dependent economy in Galapagos, which produces an imbalance in the professional paths followed by permanent residents keeping them away from other relevant opportunities that could address the need to diversify the economy model of the islands, in order to generate an immediate response post-covid and long term community resilience to climate change.

Therefore, this action aims to promote and sustain the development of consistent professional development opportunities on climate change education to teachers within the Galapagos educational system. The strengthening of professional improvement of teachers, the development of pedagogical resources, the development of school projects to support education leaders and teachers in the application of climate-friendly practices in schools to promote pro-climate attitudes and climate literacy, and the implementation of experiential learning programs for students of basic, primary, middle and higher education are key components of this action. Finally, it is important to generate technical education programs that are relevant to the demands of the labor market, as well as relevant to the interests and aspirations of young people, considering climate change impacts on food productive sectors, being one of the most important challenges for technical education in the Galapagos.

The target indicators for ECM Action 1 are described in Table 2, together with the direct and indirect expected beneficiaries.

Table 2. Target indicators and beneficiaries associated to ECM Action 1.

Target indicators	
<p>At the end of the project:</p> <ul style="list-style-type: none"> - At least 300 teachers of all school levels and sub-levels of the 20 educational establishments, and 30 school directors, are trained on climate change education, within the Teacher Professional Development Program of Mineduc (ESG Program). - At least 5 types of pedagogical resources on climate change are developed to implement the contextualized curriculum of Galapagos. - At least 12 climate-friendly pilot projects implemented in different Galapagos educational establishments. - At least 10 immersive and experiential educational experiences on climate change designed and implemented into the educational system. - At least 4 technical education programs (second and third level) for 20 students each, designed and implemented with a focus on sustainable value chains and climate change. 	
Beneficiaries	
Direct	<ul style="list-style-type: none"> - 400 teachers of all school levels and 30 school directors - 7,500 school aged children and young people - Technical staff members of the District Directorate of Education in Galapagos - Technical staff members of experiential education programs, such as Galapagos Infinito and Agents of Change.
Indirect	<ul style="list-style-type: none"> - 10 technical staff members of Galapagos Government Council and the 21 of the Galapagos National Park. - Technical staff members of Galapagos Conservancy and Scalesia Foundation.

Table 3. Logic framework of ECM Action 1.

ACTION 1: Strengthen the educational system of Galapagos to provide quality education to face climate change and promote sustainable development.		
ACTIVITY	SUB-ACTIVITIES	DELIVERABLES/OUTPUTS
1.Strengthen the educational system of Galapagos to provide quality education to face climate change and promote sustainable development	1.1 Establish a Board of Education for Climate Change, to articulate the efforts carried out in Galapagos by different institutions and organizations.	-Institutionalize and systematize intersectoral efforts for climate action in the education system through a Board of Education for Climate Change (MECC) created. -An Agenda for Climate Change Education at a provincial level is developed and implemented.
	1.2 Integrate quality climate change education into the existing professional development program of the Ministry of Education in Galapagos for education leaders and teachers, through intensive training and the development of pedagogical resources to implement the contextualized curriculum.	-Training modules regarding climate change are designed and implemented for teachers, through intensive training of pedagogical leaders and Education Institutes of the ESG Program. -Pedagogical resources about climate change are created to implement the contextualized curriculum of Galapagos.
	1.3 Implement climate-friendly practices in schools to promote pro-climate attitudes and climate literacy.	-Pilot projects implemented in a four-year period at different Galapagos educational establishments focused on adaptation and mitigation to climate change. -Climate-friendly projects replicated successfully at Galapagos educational institutions.
	1.4 Implement community engagement and experiential learning programs for students of basic education and high school, connecting to mitigation and adaptation initiatives promoted by the Program.	-Immersive and experiential educational experiences on climate change are designed and implemented every year into the educational system. -Trained teachers co-facilitate real place-based education and experiential learning opportunities on climate change with students.
	1.5 Design and implement technical education programs	-Two technical high-school degrees in sustainable food value chains

	for youth, to address the labor markets local demand in areas related to Galapagos tourism, agriculture, and fisheries value chain, within a climate change and post-COVID-19 context.	designed with a strong focus upon sustainability and climate change, and implemented in close collaboration with the Ministry of Education. -Two third-level technical degrees sustainable food value chains designed and implemented, with strong focus upon sustainability and climate change, and implemented in close collaboration with the USFQ
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Executing entities and partners for ECM Action 1:

Considering that EPI has over 10 years of experience developing and implementing educational and outreach programs related to environmental literacy through experiential education and student agency in Galapagos, this organization will be the executing entity, together with WWF (sub activities 1.3 and 1.5) for this action. On the other hand, the District Directorate of Education in Galapagos will be the main executing partner across all sub activities, as it is the institution that governs all formal education efforts within the province. This entity is the direct link with the Ministry of Education of Ecuador and implements the national education regulations in the territory. The implementing agencies of this Program (FAO, CAF y WWF) and their private and public partners (such as GNPD, MAG, Mintur) will be also executing partners, regarding the knowledge these will produce for sub activities 1.1, 1.2, 1.3, 1.5, and the mitigation and adaptation interventions that these are going to carry out and that will be linked to sub activity 1.4. However, we have specific executing partners for each of the sub activities mentioned above, that include, among others, Galapagos Governing Council (sub activity 1.1), Galapagos Conservancy and Scalesia Foundation (sub activity 1.2), Galapagos Infinito and Agents of Change (sub activity 1.4), Universidad San Francisco de Quito (sub activity 1.5).

3.1.1 Description of the current situation and baseline

The strengthening of the educational system in the Galapagos to provide quality education to be able to face climate change and to promote sustainable development would depend, to a great extent, on the capacity of its actors for effective articulation,

collaboration, and dialogue which is able to generate adequate governance to achieve these purposes. This responds to a declaration of the UNESCO which has recognized that governance, intersectoral coordination, and the establishment of alliances as indispensable mechanisms to implement Sustainable Development Goal 4: To ensure inclusive and equitable quality education, and to promote lifelong learning opportunities for everybody (UNESCO, Incheon Declaration and Framework for Action for the attainment of SDG 4, 2016).

Recently in the Galapagos, a framework of citizen participation has emerged. It seeks to encourage collective action for educational improvement through the construction of public policies and the articulation of intersectoral efforts. The Galapagos for Education Agreement (AGE) (*as its acronym in Spanish*), which is part of the National Agreement for Education and of the 2030 National Agreement for the Education, both linked to the UN Sustainable Development Goals, was created in early 2020 as a public - private pact to support the educational improvement of the islands through two lines of action. These are: 1) the articulation of intersectoral efforts, and 2) the creation of public policies through informed dialogues.

The National Agreement for Education promotes agreements and consensus in the educational field, gathering collective needs and listening to the voices of all social actors through working groups like human rights, technical education, youth and employability, education in values and Education for Sustainable Development, amongst others. This initiative invites all the Ecuadorian territory to start conversations to create specific territorial agreements, more grounded to the reality of each province.

Being an initiative that is anchored both in the political will and in the interests of civil society, the AGE, as well as the Ecuador 2030 National Agreement for the Education, a proposal framed within the 2030 Agenda for Sustainable Development of the United Nations System, seeks to transcend beyond the changes of governments and authorities. This will allow optimal governance and a joint projection into the future. Between August and October 2020, the AGE promoted informed dialogues and collective agreements between more than 800 actors from the educational sector and civil society of the 4

populated islands, in order to define the policy regarding a safe and progressive return of students to the classrooms due to the COVID -19 pandemic.

It is important to mention that the AGE has been identified as a mechanism of action for the compliance of public policy No. 2 "Improve formal and non - formal education, capacities and potential of the permanent residents of Galapagos", of the Development and Land Management Plan - Galapagos 2030. Where it is expressly mentioned as an action, the "comprehensive strengthening of the public and private education service in the province, articulated to the Galapagos for Education Agreement".

The AGE was promoted by an intersectoral committee composed of: the Ministry of Education (MINEDUC), acting as the governing body in charge of education; The Governing Council (CGREG), acting as the governing body for regional planning in the province of Galapagos; Three non - governmental organizations dedicated to education: Ecology Project International (EPI), Scalesia Foundation, and Esquel Foundation; The decentralized autonomous governments of each island; And a civil society organization: the Santa Cruz Youth Advisory Council.

As far as articulation is concerned, the AGE works through the Intersectoral Board of Educational Articulation (MIAE) (*as its acronym in Spanish*) that meets every two months. It is coordinated by a delegation from the Promoting Committee. Composed of all the educational projects in the territory, represented by 22 public and private organizations, as well as associations. The members of the MIAE agreed to create working groups to talk about prioritized topics. Working groups were created for: 1) the contextualization of the national curriculum for the Galapagos, 2) teacher professional development, 3) the strengthening of experiential education, 4) education to reduce plastic pollution, and 5) education for responsible local consumption and production.

These working groups are composed of members from the MIAE and other key actors linked to the action issue. The working groups defined their objectives and lines of action and held monthly meetings to follow up on their intersectoral commitments. As a result of these workspaces, an increase in the alliances and collaborative efforts between various members to launch collective initiatives such as the citizen science and education

program for the protection of the green turtle in Galapagos (*Chelonia mydas*) have been evidenced. In the past, this initiative was carried out by the Galapagos National Park Directorate (GNPD) and EPI. Now four organizations that are members of the MIAE have been included.

Numerous research examples confirm the role of education within social transformations and in the tackling of problems, which climate change brings. An indicator regarding this role is to include topics related to climate change within the school teaching programs. Galapagos has 400 teachers and more than 7,519 students within the school-based educational system, and although many teachers include some, often scarce, coverage of climate change topics (District Directorate of Education, 2021), there is no comprehensive approach to address climate change emergency at all levels of public education as part of a schooling that will allow sustainable development.

A challenge expressed by teachers is the limited time they need to contextualize the national curriculum and address issues within their planning such as climate change, without deviating from the essential learnings established by the curriculum.

This challenge could be mitigated in the near future, with the process of contextualizing the national curriculum in Galapagos, which began in November 2020 through an inter - sectorial effort in response to a historical desire of the community. This process can catalyze the strengthening of the educational system in the islands to face climate change and to promote sustainable development, since the contextualized curriculum for the Galapagos seeks to align the learning skills of the national curriculum to those of Education for Sustainable Development established by the UNESCO, where education for climate change is a central axis.

Actually, the Governing Council of the Special Galapagos Regime, the Galapagos District Directorate of Education and the Galapagos Agreement for Education, within the framework of a cooperation agreement with the Ministry of Education and the Education for Sustainability Project: Invasive Species, are developing until 2022, an educational innovation project for the contextualization of the national curriculum for Galapagos,

which will include, among other essential topics, the thematic of climate change, at the levels of Basic General Education and Unified general baccalaureate.

The institutionalized process of the construction of the contextualized curriculum for Galapagos involved local, national, and international experts and through an in-depth dialogue with all stakeholders (the educational sector, the productive sector, the public sector, non-governmental organizations and civil society), all together could reach agreements on the exceptional ideas, objectives and the essential issues that should be part of the teaching-learning process in Galapagos. This participatory process is the first initiative of this type in the country according to the Minister of Education, Monserrat Creamer, and will hold an official status for its mandatory application in all educational institutions of the Galapagos.

On the other hand, since 2015, the MINEDUC has been implementing, with the support of the Galapagos Conservancy and the Scalesia Foundation, a teacher professional development program with an Education for Sustainability (ESG) (*as its acronym in Spanish*) approach. The ESG program provides intensive teacher professional development (120 hours/year) for the 400 teachers and 30 directors of the 20 educational centers in the province, which provide educational service to 7,500 school aged young people. The ultimate goal of the program is to transform education (preK-12) on the islands in such a way that it helps young people develop the skills, knowledge, and desire to contribute to a more sustainable Galapagos (Galapagos Conservancy, 2017).

Therefore, this program seeks to help the teachers in Galapagos, to develop strategies and teach all core subjects (math, natural science, language arts, and social science) within the context of the challenges to be faced, associated with sustainability and real-life experiences on the islands. However, the implementation of the sustainability approach had to be postponed until the teaching skills of these core subjects were strengthened among the educators.

A strategic and cross-cutting aspect of the program is the training of 60 Pedagogical Leaders who, in coordination with the District Office of the Ministry of Education, will

perpetuate the activities of the program (training workshops and pedagogical accompaniment) towards the future.

The ESG Program has three components that allow feedback on teaching practices: 1) Teaching Institutes, which are intensive workshops where learning strategies are modeled through specialized facilitators; 2) Class observations, which allow observing the strategies modeled in the workshops during the teaching practices; and, 3) Study circles, attended by around 5 to 8 teachers from the area or sub - level, led at times by the Pedagogical Leaders, where the methodological strategies will be reviewed, analyzing them from a critical point of view, and verifying the best form of application.

Every year, the ESG Program offers two weeks of intensive workshops (Educational Institutes) and continuous pedagogical accompaniment (observations of teachers within their classrooms, reflection and feedback sessions, and professional learning circles).

The second phase of the program (2020-2025) places greater emphasis on strengthening the ability of teachers to connect learning with local examples within the Galapagos and key conservation and sustainability issues, including among them that of climate change.

Although, ESG Program is the only one in Galapagos including climate change related topics. There are scarce experiential learning opportunities and none focusing on climate literacy. Ecology Project International (EPI) is the first organization in Galapagos offering experiential learning and empowering the local community, particularly youth, in the work of science, a crucial step in conservation. EPI connects local schools, scientists, and nonprofit organizations to give youth the opportunity to do hands-on research and conservation service. Alumni act and develop as conservation leaders as part of eco clubs, community workshops, internships, and other community-driven projects.

Since 2008, Ecology Project International (EPI) in collaboration with the Directorate of the Galapagos National Park (DPNG), have carried out ecology camps to increase the ecological literacy of high school students from all schools located in the Galapagos. At the camps, students work hand in hand with scientists and park rangers to protect endangered species using the approach of place-based education and experiential

education. During 5 days of camping both on the beach and in the forest, students immerse themselves in a specially designed curriculum to improve their understanding of the fragility of the Galapagos Islands and the planet. In an experiential way, the participants learn concepts such as the interdependence of ecosystems, endemism, dispersion, and invasive species, among others. These camps are offered as part of the Student Participation Program of the Ministry of Education, where all second- and third-year high school students must complete 200 hours of work (100 hours during each school year) as a prerequisite for obtaining their high school degree.

There also are other programs in place, which use experiential education as a learning model. “Agents of Change” and “Galapagos Infinito” are nature immersive programs that are carried out in a non - formal environment and work with younger age groups, 6-8 years and 12-14 years respectively.

Some of these experiential education programs have been integrated into the formal education system but only to a limited extent. The Student Participation Program that is being carried out by the DPNG and EPI, offers 100 hours of experiential learning to high school students. However, from the information gathered in the territory to prepare this feasibility document, these experiences are more focused on other conservation problems such as invasive species and pollution due to plastics.

In Ecuador, there is an increasing interest by the Ministry of Environment and Water to empower schools and to improve climate literacy in the education system. Earlier this year, the Governing Council of Galapagos passed legislation (Ministerial Agreement No. 97) that requires schools in Galapagos to stop using single-use plastics, established with the intention to promote an eco-friendly culture and strengthen pro-environmental attitudes and behaviors in the community and especially in next generations. In support of the implementation of this Agreement, the environmental education team of the Directorate of the Galapagos National Park (DPNG) developed an edu communication campaign in all educational institutions of the province, to educate students from the basic education level about a reduction in the use of plastics. This campaign has inspired many students to replace the use of plastic bottles with reusable thermos.

However, in the Galapagos there are few initiatives like this one, especially at educational institutions that could reinforce the knowledge acquired by students through experience and sustainable practices in their schools, which could be replicated further in other environments.

Experiential and technical education involves the processes in which vocational skills are imparted so that the graduates use the acquired skills in an appropriate manner that would enable them to improve their standards of living through increased incomes, productivity, self-employment and a generally improved quality of life style.

As far as higher and technical education is concerned, this constitutes a key element in the fight to overcome poverty, the inequality of opportunities, and to promote social mobility. Social inclusion gaps are directly connected to the gaps between what schools are teaching, and what the current labor markets require, which translates into low level professional skills.

For that purpose, technical training programs constitute an essential tool to improve the professional coalification of youth and workers, and consequently improve their employability and competitiveness in the labor markets. It is worth mentioning that the target 4.3 of the Sustainable Development goals, is that “by 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.” Which argues the need to reduce barriers to development of technical and vocational education and training, especially in a climate change and post-covid context.

In Ecuador, traditionally the educational system has had a tendency to privilege the attainment of a university degree, as the ideal educational alternative, setting aside many alternatives of personal and professional realization equally important and necessary (Ministry of Education, 2018 cited by Tomacelli 2018). This presents an important problem specially because the university system in Ecuador is not large enough to supply university places for its demand. In 2019, 300 000 youth graduated from high school and there were only 179 000 university placements available for that year (El Comercio,

2020). This means that on a national level, annually there are around 121 000 youth that will not have any opportunity to access university education, therefore alternative technical, tertiary and vocational educational opportunities are tremendously necessary and pertinent.

In Galapagos, the conservation challenges are directly tied to human activity and the local economy. In that sense, there are two important challenges regarding technical education and labor markets. First, to produce the necessary workforce to supply the local labor market demand; and secondly provide relevant technical educational opportunities for Galapagos youth to supply this demand. Galapagos imports a big percentage of its workforce from the continent and from abroad, according to the 2006 census only 22% of the Galapagos workforce was born in the archipelago (Bustamante, 2010). Additionally, Galapagos has an immigration policy that allows resident visas for skilled workers that cannot be found on the archipelago for a maximum period of five years. Such measures are taken to prevent overpopulation to the islands but produces the side effect of skilled workers leaving the Archipelago after five years of acquired experience.

In this context, in Galapagos there are several labor markets demands that are unattended and require qualified workers. However, for the sake of this analysis we are focusing on productive sectors, such as the food industries, that are especially important for mitigation and adaptation of climate change in the Galapagos. It is important to mention that agriculture in Galapagos faces important challenges regarding workforce. In 2017, 75% of the agricultural food supply was imported from the mainland (San Pedro et al, 2018) and it is estimated that this fraction will increase to 95% by 2037 with no changes in food policy. Furthermore, because of the link between the lack of available labor and the pull of farmers that have gone into tourism to enhance their income, the number of full-time farmers has dramatically decreased (Walsh and Mena, 2016), which presents a further difficulty in this industry.

On the other hand, as it was described in another Appendix of this Program, food security and the economy of the archipelago could improve remarkably if residents decided to

increase their seafood consumption, which would be beneficial for the local small-scale artisanal fisheries sector and the entire economy of Galapagos. This requires diversifying markets and labor capacity to add value to fish products, regarding their use, packaging, distribution, preparation and other key elements of the artisanal fisheries value chain, which generates the demand for a qualified workforce to undertake these activities.

Meanwhile, the low percentage of Galapagos born labor force can be explained due to the short percentage of local youth who obtain pertinent technical education to fulfill this demand, only 20% of Galapagos high school graduates obtain a technical training title or a university degree (CGREG, 2016). The low attainment of titles can be explained because of approximately 450 annual graduates, 80% leave to study in mainland Ecuador, which represents an important economic expenditure for their families. From this group, 80% do not finish their studies and return to the islands, and 11% obtain their title and stay working in the mainland (UCE, 2017).

The fact that such a high percentage of high school graduates leave to study in mainland Ecuador has to be analyzed considering the following aspects. In Galapagos there are universities that offer in-person training and online training, however third - level and higher education offer is not necessarily the most important determinant of low title acquisition rates. As an example, UCE in Galapagos offered 40 placements for each career: Initial Education and Administration, but only 7 students started the process to study Initial Education and 22 for Administration. In the same year, Yachay University also offered 20 vacancies for Geology and Biology, and only 15 students started the process to study Biology (UCE, 2017).

The Central University of Ecuador conducted a study for third - level academic demand in which they interviewed 249 high school graduates and 194 former high school graduates. Both groups expressed that the greatest difficulty to study in the Galapagos is that the academic offer is not relevant to their interests. However, they almost entirely expressed the desire to continue their studies (91.8% Santa Cruz, 97.4% and 99.1% in Isabela) (UCE, 2018). The young people that were interviewed for this study suggested and showed interest in several career paths and training programs regarding,

“Environment, Biology, Agricultural Engineering, Environmental Engineering (...), Technology in Gastronomy, Technology in Hotel Management, Environmental Management and Agricultural Engineering”. Thus, the greatest need and opportunity for technical education in the Galapagos is to ensure that it is connected to the needs and aspirations of young people, as well as to the needs of the local labor markets that motivate technical training.

To fulfill the market needs, as well as the technical educational demand for Galapagos youth, it has been widely suggested to widen the educational offer, especially in programs connected with the islands and youth needs, in a post Covid economy which urgently needs to be diversified and reactivated, beyond the tourism sector.

3.1.2 Description of sub-activities and outputs

To achieve the proposed objective, the following sub-activities and outputs are proposed:

Sub-activity 1.1. Establish a Board of Education for Climate Change, to articulate the efforts carried out in Galapagos by different institutions and organizations for an effective support to the educational system of the islands regarding climate change matters.

An expected result of this project is to create, within the framework of the Galapagos for Education Agreement (AGE) (*as its acronym in Spanish*) and its Intersectoral Board for Educational Articulation (MIAE), a Board of Education for Climate Change (MECC) (*as its acronym in Spanish*) in Galapagos to plan, follow up and evaluate efforts in order to achieve a relevant and effective climate change education. Without the articulation, coordination, collaboration, and establishment of alliances, the initiatives and resources invested by the different actors involved could be limited in their scope, impact and, above all, in the sustainability of the efforts to support the educational system in the long term.

To broaden the scope and impact of the efforts carried out regarding education for climate change that will be made within the educational system, this sub-activity proposes to institutionalize and systematize intersectoral efforts through the MECC.

As mentioned above in Section 3.1.1, the AGE, is a public-private pact that arises from civil society, and that will be able to address the climate emergency if it is identified by the local community as a priority issue

Through the MIAE, a promoter committee will be defined, the same that will be in charge of creating the conditions for the constitution of the MECC. The MECC would be composed of members of the MIAE and other key actors such as implementing agencies, the private sector, NGOs, teachers and educators, the research community, as well as young people and students. Its coordination will oversee the promoter committee.

Civil society organizations play essential roles. Their commitment and collaboration are expected to be achieved from the planning to the monitoring and evaluation, institutionalizing and guaranteeing their participation in the MECC Both the private sector and NGOs can play an important role if they use their expertise, innovative approaches, business know - how, and financial resources to strengthen education regarding climate change.

Teachers and educators, as well as their organizations, are critical partners in their own right, and must be involved in all policy - making, planning, implementation, and monitoring phases. Young people, students, and their organizations are key partners that hold specific and unique knowledge and are one of the main target groups of the SDG 4- Education 2030. Therefore, they are the most indicated to determine the requirements to improve learning regarding climate change, as they are integrated as active and responsible learners in the Galapagos educational system. The MECC will work towards ensuring their active representation and participation.

The articulation and participation mechanisms of the AGE and the active participation of the members in the MIAE explained above, demonstrate a clear interest of the actors to influence upon the educational improvement of the islands. On the other hand, the recognition of the AGE within the Development and Land Management Plan - Galapagos 2030, as a mechanism for the compliance of the educational policy of the province, will ensure both the sustainability and the impact of the actions of the MECC upon public policies if it is shaped to reach agreements within this mechanism.

The MECC will create in a participatory manner, a reference framework, as well as a shared vision, that will lead to the creation of a provincial agenda on this matter.

This sub-activity puts forward the creation of the 2030 Agenda for Education aimed at Climate Change at the provincial level, in order to enhance the scope and impact of the various educational efforts linked to increasing the knowledge, attitudes, and skills of the community and of the different actors regarding the mitigation and adaptation to climate change. If the objective is for it to be consistent and far - reaching, it will be necessary to promote it from civil society in agreement with the government entities.

For this reason, the MECC, will be the coordinator of the agenda and will define a process to elaborate such agenda in a participatory manner with all the actors of civil society, authorities, organized groups and public entities.

The 2030 Agenda for Climate Change Education will be aligned with the reference framework and the shared vision built in a participatory manner by the MECC. It will also have to be binding with the different programs, projects, and initiatives in place regarding the mitigation and adaptation to climate change that the different entities are carrying out within the framework of this and other sustainability projects.

The 2030 Agenda for Climate Change Education will integrate the different initiatives towards an effective education for climate change in the Galapagos promoted by the MECC, that include those generated in Action 1. The MECC, in addition to articulating efforts and seeking alliances, will be a mechanism that will generate informed dialogues

to contribute in the creation of public policies aiming towards a more effective education for climate change.

The MECC will also work with the different institutions and implementing agencies to systematize opportunities to be linked with activities, programs, citizen science projects, community monitoring, outings with experts, etc. focused on mitigation and adaptation to climate change, which could be accessed by students, educational institutions and organized groups from the civil society.

The MECC will also be able to link local efforts with national ones and access collaborative efforts in the region, since the UNESCO supports countries to integrate climate change into their education systems, and facilitates discussions and the exchange of experiences regarding education on climate change through the organization of international meetings with experts.

At the end of this sub activity, the following outputs are expected:

- Institutionalize and systematize intersectoral efforts for climate action in the education system through a Board of Education for Climate Change (MECC) created.
- An Agenda for Climate Change Education at a provincial level is developed and implemented.

Sub-activity 1.2. Integrate quality climate change education into the existing professional development program of Mineduc in Galapagos for education leaders and teachers, through intensive training and the development of pedagogical resources to implement the contextualized curriculum.

This sub-activity seeks to generate the specific capacities of pedagogical leaders in climate literacy. Place-based education is an important pedagogical framework designed to connect what students are taught in school to real-world challenges, opportunities and

connections; learning experiences match the complexities of real life and are taught through an integrated, interdisciplinary and frequently project-based approach where all learners are accountable and challenged.

Place-based education is an effective approach to education that is centered on the students' learning and heavily emphasizes inquiry into topics of importance in the community. This approach will be used on this project to promote active, experiential, and genuine student learning within the context of their social, physical and cultural environment (Nichols et al., 2016). This framework will be implemented to teach climate and sustainable subjects focusing on the Galapagos reality. Precisely, creating learning opportunities situated within the learner's surroundings has been shown to enhance student engagement, stimulate curiosity and importantly, through their investigations, secure commitment to a sense of place (Nichols et al., 2016).

The benefits of place-based climate change education are two-fold: expanding student understanding and encouraging action. The framework grounds the abstract concept of global climate change in a meaningful context that helps students conceptualize the phenomenon in terms of its local impact and significance on a more personal level. Importantly, lessons learned in a local context can be applied on a larger scale so that students can understand the global impacts of climate change. While focusing learning opportunities on local impacts is important to help learners feel empowered, the scope of lessons can then be expanded so that students understand the gravity of the problem, so long as they are presented in ways that do not instill paralyzing fear or despair (O'Neill & Nicholson-Cole, 2009).

This activity focuses on strengthening teacher professional development in the Galapagos to ensure that they:

- Have a deep understanding of the contextualized curriculum components associated with climate change;
- Master the topic of climate change satisfactorily to teach it to their students; and,

- Know how to “translate” the contextualized curriculum, the support materials, and their understanding of climate change in authentic and meaningful learning activities.

To achieve this, the Education for Sustainability Teacher Training Program (ESG Program) of Mineduc in Galapagos described above in Section 3.1.1, will be supported through the following actions:

- Intensive training (workshops of two days per year) for all Pedagogical Leaders trained by the ESG Program, on climate change, regarding technical, scientific, economic, social aspects, as well as strategies for teaching these concepts. After participating in these workshops, the pedagogical leaders will replicate them within their respective educational centers during the Study Circles, complementing the workshops for the dissemination of support materials described below. The specific aspects to be discussed in these workshops will follow a sequence that will ensure that in the 5-year period of the project, teachers will be able to develop a broad and deep understanding of all the essential dimensions of climate change, from a local, regional and global perspective.
- Integration of the topic of climate change during the Educational Institutes. It will be ensured that the Educational Institutes have the support of a facilitator with strong experience regarding the subject of climate change. The facilitator will actively participate in the design and implementation of the training workshops, thus helping the teachers to deepen their understanding of climate change and their mastery of strategies to integrate this topic through the implementation of the contextualized curriculum and the use of support materials described below.
- Accompaniment and advice in "real time" for pedagogical leaders, while they perform their role as mentors/pedagogical advisors with teachers in their respective educational centers, regarding the planning and implementation of the contextualized curriculum, carrying out support visits to the classroom in order to ensure a real transfer of the methodologies and climate literacy.

Complementarily, this sub activity aims to provide technical assistance to the Galapagos District Education Office to strengthen the new contextualized curriculum in the area of climate change and to develop support educational resources (teaching guides, model pedagogical cards, and other teaching resources) that will facilitate the work of teachers from different levels and subjects.

These resources will promote an interdisciplinary approach and the use of innovative methodologies such as experiential education, project-based learning, and investigation so that students progressively develop a deep understanding of a wide range of concepts associated with climate change and global challenges.

Approximately 20 teacher leaders, called pedagogical leaders trained by the ESG Program will work in this effort (11 from Santa Cruz, 5 from San Cristóbal, and 4 from Isabela) to produce two types of resources each year. These are: 1) Educational materials that will be used as resources for teachers' classes with key contents of the curriculum related to climate change; and, 2) The design of units that involve methodologies that will be centered on the student.

This effort will be inserted into the ESG Program through collaborative work between 1) the 20 pedagogical leaders; 2) local professionals with knowledge and experience in the area of climate change; 3) Pedagogical Advisors of the ESG Program; and, 4) external specialists in climate change, as needed. The idea is that both of these resources will be created by educators in Galapagos, for educators in Galapagos.

Through this collaborative work, it will ensure that pedagogical leaders have the necessary support for the development of educational resources. The leaders will receive counsel on the contents to be addressed, training to deepen their understanding of these topics, and advice regarding teaching strategies.

These pedagogical leaders will meet each year, in periods of 15 days, to develop the resources on climate change. The training for the implementation of these resources will

be carried out within the programmed study circles of the educational institutions. Each year of the project, work will be done on one of the five sublevels of the curriculum structure.

In the same manner, as the ESG Program has been working until now, this group of Pedagogical Leaders must have external advisers both in pedagogical and disciplinary matters, in agreement to the requirement made according to the evidenced needs. These advisers are professionals with great knowledge and experience in the disciplinary or pedagogical areas who fulfill the role of accompanying the Pedagogical Leaders and teachers in the training process to guide the specific training needs.

At the end of this sub activity, the following outputs are expected:

- Training modules regarding climate change are designed and implemented for teachers, through intensive training of pedagogical leaders and Education Institutes of the ESG Program.
- Pedagogical resources about climate change are created to implement the contextualized curriculum of Galapagos.

Sub-activity 1.3. Implement pilot projects to support education leaders and teachers in the application of climate-friendly practices in schools to promote pro-climate attitudes and climate literacy.

Schools have a special role to play in reducing emissions, a role that goes beyond their contribution to reducing national emissions. Through the curriculum and through their practices, schools can set an example to today's children and young people. By engaging children in actions to reduce emissions, schools can enhance children's learning and build their understanding of how they can respond to climate change (DCSF Sustainable Development Action Plan, 2015).

In targeting the adoption of specific behaviors, many scholars could turn into education as a pivotal tool in creating long-term change (Kelder et al., 1994; Luepker et al., 1983) and promote sustainable development. It is vital to promote projects to support education leaders and teachers in the application of friendly practices in schools to provide the next generation with the skills and abilities to better adapt to climate change.

Complementary with sub activity 1.2, this current sub activity will provide support regarding the design and implementation of pilot projects connected to the new contextualized curriculum for Galapagos. Where the provision of support to Pedagogical Leaders (mentor teachers) is proposed, so they may put into practice their understanding of the climate change issue within authentic and meaningful learning activities for students. Its objective is to strengthen skills and generate behavior change intentions among students through the design and implementation of sustainable practices for the mitigation and adaptation to climate change in their schools.

Each year one pilot project per island will be given support. It will be selected by the MECC (sub activity 1.1) and other institutions involved in the mitigation and adaptation to climate change in Galapagos. The educational establishments of each island will be provided with guidance from experts and technicians from different institutions on the possible topics or areas that may be the subject of pilot projects according to the actions carried out in components 1 and 2 (lead by MAG, MINTUR, DPNG, CGREG, among other public institutions together with CAF, FAO and WWF) of the Program. Once the 3 or 4 pilot projects have been selected, EPI and WWF will offer technical and pedagogical assistance for their development. The projects will be focused on adaptation and mitigation to climate change from the educational establishments.

These climate-friendly projects will be implemented in a few model schools with the aim to inspire others. Schools have a central role to play in helping people understand the causes of climate change, preparing them to live with the impacts of climate change, and empowering them to take appropriate actions to adopt more sustainable lifestyles. In the long term, these climate-friendly projects will be used as models to influence public policy

at a local and national level, as the Ministerial Agreement No. 97 mentioned above in Section 3.1.1, with the support of the MECC. Lessons learned as well as the most positive experiences will be replicated over Galapagos educational establishments.

At the end of this sub activity, the following outputs are expected:

- Pilot projects implemented in a four-year period at different Galapagos educational establishments focused on adaptation and mitigation to climate change.
- Climate-friendly projects replicated successfully at Galapagos educational institutions.

Sub-activity 1.4. Implement community engagement experiential learning programs for students of basic education and high school, connecting to mitigation and adaptation initiatives promoted by the Program.

Sharma (2017) and Siegner (2018), highlight that experiential learning is the most effective way to construct knowledge, skill and value direct experience. Thus, experiential climate change education engages students in hands-on activities and projects that are solution-oriented alongside the presentation of climate science. This approach builds on the best practices of both experiential learning theory and climate change communications by incorporating personal action accompanied by reflection and fostering hope and positive engagement around a complex global issue (Siegner, 2018).

The implementation of experiential learning programs at primary and high school level in Galapagos are extremely important. The AGE has addressed the importance of experiential education with the creation of an Board of Experiential Education (MEE) (*as its acronym in Spanish*). Precisely, this sub activity will develop a module entirely dedicated to climate change, which will be inserted in the ecology camps of the DPNG and EPI as part of the Student Participation Program mentioned above in Section 3.1.1, where the participation of students in the mitigation and adaptation programs being carried out on the islands will be involved at a more complex level.

Education leaders trained on the professional development program of MINEDUC will have the opportunity to participate in the ecology camps as shadow educators. This opportunity will allow trained teachers to be immersed in a real place-based education and experiential learning education opportunities with students. This opportunity will strengthen the knowledge and skills acquired at the professional development program (ESG Program) under the sub-activity 1.2. described above.

Furthermore, the present activity aligns with the new contextualized curriculum for the Galapagos which proposes include climate literacy lesson contents, experiential education and place-based education as two of its main pedagogical approaches in order to achieve the skills of an Education for Sustainable Development. Placing special emphasis on the realization of immersive experiences in nature, which last longer than an ordinary school day, during three moments of the educational system: 1) Basic Elementary sub - level (6-8 years); 2) Basic Superior (12-14 years) and; 3) Senior High School (16-18 years old).

On the other hand, based on the successful experiences of programs such as Agentes de Cambio and Galapagos Infinito, for the Basic Elemental and Basic Superior sub levels, technical assistance and support will be provided to these programs. This targeted towards the development of content and lessons on climate change, as well as to the design of experiences of experiential learning linked to real mitigation and adaptation programs and projects that are being carried out in components 1 and 2 of the Program. In addition, support will be provided for the implementation of these camps with educators specialized in the approach of experiential education and risk management, as well as with the logistics to increase their scope and offer this program to the largest possible number of students.

At the end of this sub activity, the following outputs are expected:

- Immersive and experiential educational experiences on climate change are designed and implemented every year into the educational system.
- Teachers co-facilitate real place-based education and experiential learning opportunities on climate change with students.

Sub-activity 1.5. Design and implement technical education programs for youth, to address the labor markets local demand in areas related to Galapagos tourism, agriculture and fisheries value chain, within a climate change and post-covid context.

Considering the diagnosis carried out in Section 3.1.1, Galapagos does not need massive technical training programs that saturate and exceed the labor demand. Technical programs must be relevant to the amount of labor required by each labor market.

Therefore, to be consistent with the actions to promote sustainable and climate-smart value chains that are proposed within the framework of the Program, the interests of young people around these areas were taken into account, as well as the needs of the labor market, and mainly the need to generate specific actions with the required climatic additionally. In this sense, we propose to generate technical education programs focused on sustainable food value chains, regarding both agriculture and artisanal fisheries, with a climate change perspective, both in their production, added value, preparation, and distribution, which are described in detail below.

It is important to generate a labor force capable of fulfilling the food demand and generating pertinent conditions for ensuring food security on the islands. The production of food is only one step in the food supply chain. Therefore, the need to add value to the products, conserve them, and use them in a sustainable fashion is very necessary as well to promote a local-based and circular economy. This should be made with a strong focus on sustainable development to prevent an economic model that further increases the pressures on the islands within a climate change context.

Considering all of the above, through this sub-activity the generation of four technical education programs focused on sustainable food value chains is proposed. Two of them aimed at second-level education (technical high school degrees), and two of them aimed at third-level education (technical degrees).

The technical high school degree is a three-year training program that holds a technical focus for the job placement of young people. This program is carried out within a high school degree curriculum. In which, during the first two years, 10 hours a week will be dedicated to technical training, and 25 hours will be dedicated to the study of the common core subjects (humanities and sciences). In the third year of this training, 25 hours will be committed to technical training and 10 hours to subjects of the common core. In the case of this project, the entire technical education component will be developed and implemented with a focus on sustainability and climate change, thus strengthening the integration of this approach within the common core subjects. One or two teachers specialized in the different technical subjects will carry out the schooling of the technical aspects of these programs. This program allows students the possibility of quick job placement, as well as the prospect of continuing their higher studies in other areas or deepening their technical knowledge within the branch they have chosen.

From the perspective of the District Directorate of Education for the Galapagos, collected through interviews carried out for this feasibility document, there are several opportunities for the training of technical high school graduates, above all within the food value chains. There is the possibility of implementing a technical high school degree within the agricultural area comprising the following sub-specialties: Fish, Mollusk and Crustacean Culture, Agricultural Production, Conservation and Management of Natural Resources, Industrialization of Food Products. The Galapagos Educational District expressed its full support and interest in generating technical training with climatic additionally for the treatment of this technical area. As well it suggests carrying out a more detailed study of the needs markets currently have, and those of the students who will participate in these promotions. Specifically, with the goal that the results they render be as relevant as possible. This is a first step that will lead to the construction of the specific curriculum for

the two types of technical training programs, with a strong focus upon sustainability and climate change.

In the case of third level technical degrees, these are training programs for people who have completed their high school studies. These will last one or two years. The technical degrees are offered by universities and hold a strong focus upon technical training according to the demands of the labor market. The technical degrees also will allow students, once they have completed their studies, to continue with third level training and in some cases even fourth level education. As is the case of university studies, technical studies are made up of the study of various subject areas and subject topics. These are generally very focused on a know - how approach and, therefore, have a component of labor practices, in some cases in direct alliance with private companies. The professors in charge of these programs require a high level of specialization and, in general, are part of the faculty of a university, so that the subjects of the technical courses are part of their weekly workload in conjunction with other subjects. For this program, it is expected that this process is able to be generated in conjunction with the faculty of the USFQ, with the goal of achieving the quality of education and the diversity among teachers necessary for these programs' levels.

The universities present in the Galapagos can play an important role in the implementation of this educational option. Currently, eight universities are present, mostly offering distance or blended programs that are not preferred by the young people (UCE, 2018). The Universidad San Francisco de Quito (USFQ) (*as its acronym is Spanish*), interviewed for this purpose, expressed its interest in co-implementing training within a technical education degree modality (1 or 2 years of third level technical training) in related topics. In this sense, the USFQ is committed to providing as a counterpart its facilities, land, and expertise for the technical training of young people from the Galapagos. They manifested the absolute pertinence and relevance of the proposed job training programs, above all because of the important need to diversify the productive capacity of the islands and to solve the need for fresh, diverse, quality food, and sustainable production and land-use management.

The proposed programs will be implemented in conjunction with the relevant institutions. For each type of program proposed, we have the manifest interest, endorsement, and commitment of the USFQ to provide support for their design and implementation, regarding the third-level technical level degrees, as well as the support of the Galapagos Educational District for the high school technical degrees.

It is proposed to develop four promotions with 20 number of students each, two at the third level (technical degrees), and two at the second level (technical high school degrees). At the end of the programs, we are going to undertake specific actions for participating students, that will have already gained practical skills, to insert themselves into existing job markets, to generate new jobs and/or ventures, with a focus on sustainability and resilience in the face of climate change.

These programs will be a great opportunity for the collaboration between the state, private NGOs, and social actors, to be able to generate educational processes that hold a vision of environmental sustainability and economic and social inclusion. In addition, holding a vision of strengthening technical education as a relevant alternative for job training in a context of climate change, we seek that the implementation of these programs promote local revaluation processes towards technical training, as well as to support national efforts for its continuous development and empowerment.

In this sense, it is sought to develop a strategy for the replication, scaling, and sustainability of these programs. Therefore, the programs will have monitoring and evaluation systems, to strengthen the implementation capacity and to increase the impact of the expected results in the short and medium terms. In addition, it will have a monitoring plan implemented by the aforementioned institutions with a local base, to monitor students and graduates of these processes, in order to identify their post - study practices, their job stability, their entrepreneurial capacity, and their work within the training area among others. All of which will serve to identify lessons learned and as well as good practices, and to adjust and strengthen the programs accordingly.

In addition, experiences, lessons learned and good practices will be systematized, in order to have tools for the effective transfer of knowledge and learning from experience, to be able to influence processes of institutionalization, replication and scalability at the local and national levels.

The designed programs will be specifically focused on the context of the Galapagos. However, it will have relevance within the national context as it will be one of the first technical training efforts with a specific focus on sustainability and climate change from a know-how perspective. We hope that this experience in Galapagos may positively influence the National Plan for Strengthening and Revaluation of Technical and Technological Training.

Through a socialization and advocacy plan, this experience of technical training in the Galapagos, will be shared and disseminated in order to promote more options for technical training, at the local and national levels within the context of climate change. As well as to influence strategies to guarantee the sustainability of these efforts, through public - private partnerships, among other things.

These two technical training programs will allow the Program to generate job training opportunities for different audiences within the productive areas related to Galapagos food system. As well as to link second - level studies with third - level studies, to achieve a deep professional education, without denying the option of a quick job insertion in the case students choose this path.

At the end of this sub activity, the following outputs are expected:

- Assessment of the specific market needs in the food value chain, in conjunction with an assessment of students' specific interests and needs in this area.

- Two technical high-school degrees in sustainable food value chains designed with a strong focus upon sustainability and climate change, and implemented in close collaboration with the Ministry of Education.
- Two third-level technical degrees sustainable food value chains designed and implemented, with strong focus upon sustainability and climate change, and implemented in close collaboration with the USFQ
- Monitoring and evaluation system to strengthen the implementation capacity and to increase the impact of the expected results in the short and medium terms, with a focus on the students' post study practices.

3.2 ECM Action 2. Strengthen knowledge and foster engagement of the general public and key stakeholders on climate change impacts and solutions.

This action aims to facilitate information, practical knowledge, tools and outreach opportunities, to encourage local community interest, support and active involvement in addressing climate change.

Climate change communication will be integral and fundamental to the successful implementation of the Program in the short and medium term, and will lay an important basis for promoting lasting engagement with climate change adaptation and mitigation practices (Goldberg et al., 2020). Through climate change communications and a social and behavioral change approach, this action aims to develop a comprehensive knowledge management, communication and outreach program for the Galapagos focused on climate change in order to enhance climate literacy and social commitment towards mitigation and adaptation efforts.

However, climate change communication is not only about informing, educating, persuading and mobilizing towards the solutions of this global problem. As climate change communication is shaped by our different experiences, values, motives, mental and cultural models, it seeks to understand the complex and dynamic processes within communities and societies, and define more effective communication strategies and tactics to influence people's awareness, understanding, concern and action on climate change (Yale, 2021).

Climate change communication has moved away from approaches underlying science communication, where public was engaged through “top-down” communications based on expert understandings (Nerlich et al., 2010), and has moved closer to approaches based on social sciences, like environmental psychology and behavioral sciences (Armstrong et al., 2018). These approaches suggest that in order to foster climate engagement it is fundamental to consider broad aspects including the “cognitive and affective, both essential and intrinsically interdependent” (Goldberg et al., 2020). Thus climate change communications through a “bottom-up” and “two-way” approach,

considers values, beliefs, motives, attitudes and other contextual factors, revealing the important linkages between climate change communication, environmental education, behavioral sciences and environmental psychology (Armstrong et al., 2018).

Research and experiences carried out applying behavioral sciences to communication strategies, campaigns, and other communication interventions, suggest some behavioral insights in order to add value and achieve more effective communication interventions (Armstrong et al., 2018; RARE and BIT 2019; USAID, 2013). One of the most relevant insights emphasizes the importance of understanding and integrating non-conscious decision-making processes into the design of the interventions, focusing especially on the cognitive bias, the mental short-cuts and on social influences. In addition, to influence the social and physical context of behaviors, for example to recognize perceived social norms, or to improve the availability of products and the access to services, can have a great impact upon behaviors (Armstrong et al., 2018; RARE and BIT 2019; USAID, 2013).

Social and Behavior Change Communication (SBCC), is a framework that systematically applies communication processes and strategies that are interactive, theory-based, and research-driven to address change at an individual, community, and societal level (USAID, 2013). SBCC refers to both social change and behavioral change, integrating a more comprehensive approach than other communication frameworks. This framework uses “advocacy, behavior change communication (BCC), and community mobilization strategies to influence changes at the individual and social levels” (USAID, 2013).

Considering all of the above, the media plays an important role in shaping public perceptions of climate change. As most adults learn about climate change from the media, how the media present climate science, impacts and solutions will influence “whether and how the public chooses to act to address climate change” (Armstrong et al., 2018). However, media messages and portrayals of climate change risks and solutions are interpreted and constructed differently depending on the contextual and individual factors of the audience (Nerlich et al., 2010). Meanwhile, the role social media plays

across society has “revolutionized the communication of prominent public issues such as climate change” (Pearce et al., 2018). This transformative digital platform has opened up new spaces for public debates, has closed the gaps of communication between individuals, and has increased the potential of individuals to reach large audiences (Pearce et al., 2018).

Whether through traditional media or social media insights analyses, gaining a deeper understanding of people’s full information environment is extremely important for climate change communications. However, “people’s views and desire for action on climate change are likely shaped by several additive factors in their information environment, including their perception of social norms, media consumption, and conversations with close others in their social network” (Goldberg et al., 2020).

Analyses of recent applied and research case studies of climate change communications, and emerging behavioral theories, have identified significant barriers and opportunities regarding the key role that communication plays on perceptions, attitudes and intentions to act on climate change. The way information and knowledge are presented and delivered to the different audiences is crucial to effective climate change communications (Armstrong et al., 2018).

As a result of the reviewed studies and analyses, this action will integrate findings regarding the most adequate approaches, strategies and tools to achieve effective climate change communications. Principles from behavioral sciences and environmental psychology, recommend some evidence-based approaches and tactics to effective climate change communications regarding aspects of language, including, among others, framing messages, narrative, using compelling metaphors and analogies, and using trusted messengers (Armstrong et al., 2018).

Climate change communications and social and behavioral change communications can happen in many ways, and this action will take this perspective into consideration throughout the three sub-activities, which will be further described below.

While awareness of climate change is growing within society, much of the public, including teenagers, still lacks a comprehensive understanding of the topic. Certainly, a general lack of information about climate change is a contributing factor to poor climate change literacy among adolescents and community members (Meghan, 2018).

For that matter, knowledge management is integrated as a complementary and necessary aspect in this action that will enable effective climate change communication. Knowledge management on climate change refers to the process of development, exchange of information and experiences, as well as its efficient use in order to achieve different objectives such as to inform decision-making based on evidence, to strengthen governance processes, educate, raise awareness, among others. It is also considered a multidisciplinary approach to achieve the objectives of an organization or project, making better use of knowledge (Ministry of Environment and Water, 2017).

Adequate knowledge management allows a better understanding of what information the organization or project produces and elaborates, who houses the knowledge (a team, a person, etc.), and what is the best way to transfer such knowledge to specific audiences, so that this information becomes useful, productive, and is able meet the aforementioned objectives (Ministry of Environment and Water, 2017).

The ACE framework mentioned above in Section 2.3, as part of its key elements, includes public access to information related to climate change. Considering that “the initiatives to involve the organizations of citizens and civil society in the responses to climate change can improve to the extent that information becomes available to all and free of charge” (European Commission, 2020). Therefore, providing the public with timely, relevant and understandable data, information, and knowledge about climate change, is key above all when developing effective policies and getting the population to become involved in its implementation (European Commission, 2020). It is also key to promote the involvement of the local population with mitigation and adaptation actions, through the integration of

this knowledge in order to strengthen existing and new communication processes in Galapagos.

However, regarding the above, the lack of capacity in Galapagos to effectively integrate climate change aspects into existing communication processes and interventions as mentioned in Section 2.4, makes this even more necessary. The MAAE has identified as a challenge the dispersion and little dissemination of information and knowledge related to the effects of climate change and its potential solutions (Ministry of the Environment and Water, 2017). The above, reinforce the need of national and regional climate change communication strategies, local communication plans and interventions regarding mitigation and adaptation to climate change, that are far-reaching, well- targeted and that really allow the promotion of pro-climate attitudes and behavioral intentions (European Commission, 2020).

Amongst other communication interventions, campaigns can be a useful strategy to promote climate literacy and pro-climate attitudes; however, if they do not integrate the appropriate approaches and tools, these may be insufficient to achieve behavioral changes. Campaigns focused on providing information and awareness-raising, place great value on the knowledge that people must have for decision making, but they generally lack a deeper and more realistic understanding of the drivers of human behaviors (Rare and BIT, 2019).

Environmental conservation campaigns are usually aimed at raising awareness and promoting pro-sustainable attitudes and values. However, “evidence of a prevalent value - action gap” (RARE and BIT, 2019), suggests that designing a communication campaign under the premise that greater awareness and values lead to behavior, results as ineffective. There are drivers such as social norms, ingrained habits, or other non-conscious mental processes that dominate behaviors and that are not usually evaluated and integrated when designing the campaigns (Armstrong et al., 2018; RARE and BIT 2019; USAID, 2013). Here lies the importance of developing climate change

communication campaigns in Galapagos that are behaviorally-informed and designed upon the most effective communication approaches, tactics and tools exposed above.

Therefore, this action aims to develop a knowledge management and outreach platform, climate change communication strategies and plans, and behavior and social change campaigns, to encourage Galapagos' community interest, foster social commitment to support mitigation and adaptation efforts, and motivate active citizen involvement to address climate change.

The target indicators for ECM Action 2 are described in Table 4, together with the direct and indirect expected beneficiaries.

Table 4: target indicators and beneficiaries associated to ECM Action 2.

Target indicators:	
<p>At the end of the project:</p> <ul style="list-style-type: none"> - A knowledge management digital platform on climate change with at least 8 different sections, is developed and implemented - A comprehensive climate change communication strategy for the Galapagos with at least 8 different types of contents and materials, is developed and disseminated through a multi-channel and multi-platform approach. - At least 4 activations of a behavioral change campaign are designed and implemented in the 4 populated islands. 	
Beneficiaries:	
Direct	<ul style="list-style-type: none"> - 25,000 residents of the Galapagos - Local key stakeholders of the Program (300 fishermen and their families, farmers, tourism operators)

Indirect	<ul style="list-style-type: none"> - 20 staff members of GNPD, 10 of CGREG, 10 of local governments, 10 staff members of MAG, Mintur, ABG. - 30 staff members of Galapagos based NGO, local civil society organizations and local professionals.
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Table 5: Logic framework for ECM Action 2.

Action 2: Strengthen knowledge and foster engagement of public and key stakeholders on climate change impacts and solutions.		
2.Strengthen knowledge and foster engagement of public and key stakeholders on climate change impacts and solutions.	2.1 Develop a knowledge management and outreach digital platform that makes updated and relevant information, knowledge, lessons, and resources regarding climate change in the Galapagos, understandable and accessible to the public and key stakeholders.	<p>-A climate change knowledge management and outreach digital platform that gathers available and relevant information on climate change in Galapagos, is developed.</p> <p>-A communication and outreach plan, linked to the platform, delivers general communication and education climate change-related materials to key stakeholders.</p>
	2.2 Develop and implement a communication strategy based on innovative approaches and methods, to strengthen knowledge and foster commitment for the adoption of climate change mitigation and adaptation measures.	<p>-A behavioral-informed and comprehensive climate change strategy is designed and implemented, integrating innovative and effective communication approaches, methods and tools.</p> <p>-A cross-cutting content plan will be developed through a variety of graphic, audiovisual and written communication resources, and disseminated through a multi-channel and multi-platform approach.</p>
	2.3 Develop a behavioral change campaign aimed at consumers of the food system in Galapagos, focusing on those behaviors that can be effectively addressed by communications interventions.	<p>-A Behavioral Insight Analysis focused on food consumers in Galapagos, is designed and carried out.</p> <p>-A social and behavioral change campaign focused on consumers regarding fisheries, agriculture and</p>

		tourism value chains in Galapagos is designed and implemented in the four populated islands.
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Executing entities for ECM Action 2:

Considering that WWF-Ecuador has over 15 years of experience in strategic and integral communication processes regarding conservation and sustainable development of the Galapagos, educommunication and community mobilization campaigns, such as Reciclaman and Earth Hour, this organization will be the executing entity for this action. On the other hand, the Galapagos Government Council and the Galapagos National Park, considering their governing and management role in the province and protected areas, and technical capacity -specially on communications- within their teams, will be the two main executing partners. Moreover, the implementing agencies of this Program (FAO and CAF) will be also executing partners regarding all the knowledge and experiences that will be generated through this project, together with other local government institutions, that will be constantly feeding the knowledge management and outreach platform, communication strategy and behavior change campaign (mainly FAO, regarding agriculture value chain).

3.2.1 Description of the current situation and baseline

Some challenges, needs, and opportunities regarding the ACE have been identified for all countries in the region, including Ecuador. On the one hand, it was identified that the messages transmitted by the media about climate change are scattered, confusing, focused on disasters, alarmist, and not very rigorous; focusing more on alarmist news rather than on news that strive to inform, educate the public opinion and inspire hope for climate action. Faced with this challenge, it is proposed to focus efforts to increase and improve the capacities of the media by providing them with training on climate issues. Including the technical support for the generation of news with a climate change approach that does not focus exclusively on negative consequences. Also, empowering the

audience as collaborators of the responses, mobilizations, and effective actions in search of solutions to the climate emergency (European Commission, 2020).

Some initiatives in Latin America have been created with a view to meeting the needs outlined above regarding climate change communication, knowledge management and community outreach. ConexiónCOP is an informational platform on climate change issues that helps facilitate the work of Latin American journalists and opinion leaders, through the access to daily updated news, interviews, reports, and stories all related to climate change. During 2020 the Climate Radar, a specialized report that is part of ConexiónCOP, analyzed more than 14,500 news items related to climate change in 50 communications media within Latin America and the Caribbean, “a figure that continues to be low because it represents less than 2% of the total generated information” (ConexiónCOP, 2021). During that year, more than a million people viewed the publications of Climate Radar.

Another relevant initiative is LatinClima, a large community and information center on climate change communication for Latin America and the Caribbean. It is targeted to journalists working or interested in covering issues related to this subject. As well as to organizations with projects in the framework of climate change, networks and associations of journalists and communicators in the region, and universities. It also has partner organizations at the regional level working together in this initiative, that include regional news agencies, knowledge management platforms on climate change, networks and associations of journalists, large Latin American communications media, among others. It provides capacity building services, development of journalistic initiatives and tools; generates, disseminates, and exchanges information on the subject with the vision and reality of our region; and promotes calls for scholarships awarded to journalists to develop stories regarding climate actions carried out within the region (MINAE, MVOTMA, CATIE y GIZ, 2015).

Beyond the national level policies and instruments described above in Section 2.3, that highlight the importance of raising awareness and leveraging public engagement on climate

change, there are limited and not consistent communication efforts to address these objectives.

In Ecuador, there are some awareness campaigns, environmental education actions, training processes for public officers, and an attempt has been made to make information on climate change more accessible to the Ecuadorian population. However, despite these efforts, communication and outreach programs with a focus on climate change are still limited. There is little public awareness about the problem of climate change, as well as little information through the mass media and social networks. The latter being an opportunity to promote the generation of programs and tools that may help disseminate progress, results, mitigation and adaptation measures within the country (Ministry of Environment and Water, 2017).

Other communication and public awareness institutional efforts in place focused on climate change have the support of international cooperation, though they continue to be specific and isolated actions. Within the framework of the PLANAAC (*as its acronym in Spanish*) Project led by the MAAE with the support of the UNDP, some communication actions have been planned, among which an exchange of communication experiences applied to climate change issues with a gender perspective was carried out. NGOs and other government institutions, in spite of having carried out information and dissemination actions that seek to raise awareness about climate change, these are still very scarce and do not achieve a real impact in order to promote the mobilization of Ecuadorian citizens towards climate action.

Both national organizations from the civil society and international cooperation also work on some of these aspects related to climate change communication, knowledge management and outreach in Ecuador. Within the framework of international cooperation projects, some organizations such as Latin American Future Foundation (*FFLA*) (*as its acronym in Spanish*), Grupo Faro, The Climate and Development Alliance (CDKN), UNICEF, UNESCO, have in place projects related to the ACE.

Regarding the institutional capacity to carry out these processes, the MAAE currently has some directorates and undersecretariats that are in charge of developing climate change issues, and these have some competencies and components regarding ACE. The Undersecretariat for Climate Change works on awareness-raising and training actions, within the framework of mitigation and adaptation measures at the national and sectoral levels. As well as the focal point of the ACE in Ecuador, works as part of this Undersecretariat. The Environmental Education Directorate has also carried out some actions regarding climate literacy within the field of non-formal education.

Meanwhile in Galapagos, the Directorate of the Galapagos National Park (GNPD) has the Environmental Communication, Education and Participation Program (CEPA)(*as its acronym in Spanish*). This program is transversal to all the programs and departments of the GNPD, which aims to "promote a Galapagos culture characterized by a sustainable lifestyle that takes advantage of the opportunities offered by the protected areas for environmental education, recreation, and participatory management models" (Directorate of the Galapagos National Park, 2014). The CEPA strategy (2008-2012) seeks to prevent, mitigate and solve the challenges and socio-ecological problems of the Galapagos through social interventions, differentiated according to the acknowledged population sectors.

In Galapagos there have been many efforts by management public institutions and NGOs to engage local population and visitors toward pro-environmental attitudes and behaviors, through strategic communications and environmental interpretation. However, there is a lack of focus on climate change on those strategies. On the other hand, interpretative communication strategies have been widely used to promote environmental knowledge and supportive attitudes in the Galapagos protected areas. Ecotourism experiences containing a targeted interpretative communication strategy may effectively and positively influence not only site-based knowledge, but attitudes and intentions related to pro-conservation behaviors in the Galapagos (Powell and Ham 2008).

During interviews for the development of this feasibility document, those in charge CEPA (*as its acronym in Spanish*) of the GNPD and the Governing Council of the Galapagos Special Regime (CGREG) (*as its acronym in Spanish*), stated that there is not enough knowledge neither institutional capacity to develop communication materials or interventions to engage the community with relevant knowledge on climate change.

As suggested by the ACE, public access to available information, knowledge, and resources is essential to engage citizens in responses that are more effective to address climate change. Making information, data and relevant statistics freely accessible and available on the Internet to all citizens is, above all, key when developing public policies and achieving enforcement on behalf of the population (European Commission, 2020).

At the global and regional levels, there are various initiatives, networks, and management, exchange and transfer of information and knowledge platforms on climate change. Their approaches range from adaptation, climate finance, communications, training, low-carbon development, research, governance, among others. And within the common objectives of these initiative are, among others, to strengthen governance, the articulation of efforts, and the coordination between actors from various sectors relevant to climate change; to strengthen knowledge and capacities related to mitigation and adaptation measures; the exchange of experiences and the formation of experts and practitioners networks; the generation of data for decision making.

However, in a survey carried out by the Activating Networks for Climate Stability initiative in 2018, it was identified that a major challenge in order to improve the operation and impact of these networks and platforms in the region was the lack of capacity to manage knowledge. CDKN identified 18 networks that work on similar issues and, therefore, promoted the creation of a Knowledge Center on Climate Change in Latin America called Climate Knowledge Hub - Klik Hub. Among its objectives, is to promote learning and collaboration in knowledge management with incidence and impact upon climate action. It brings together 19 institutions in the region, to connect and articulate networks in order to catalyze knowledge towards climate action (CDKN, 2020). The Ecuadorian university,

Flacso, through its open access digital library Flacso-Andes, is responsible for managing the repository of publications of the Clik Hub members. In addition, the organization FFLA, in its role as facilitator and regional coordinator for the Climate and Development Alliance (DKN) region, integrates the Secretariat of the Hub. At the international level, there also are practice communities to exchange and share different approaches and best practices of web-based climate change knowledge platforms, considering the different challenges they present with respect to development phases and capacities.

At the regional level, the need to improve dialogue, coordination, and complementarity of intersectoral actions in an articulated and permanent manner identified. To do this, the European Commission 2020, proposes to improve the dissemination of the achieved progress and lessons learned in the field of climate change, and to move forward in the creation of shared resources repositories in order to promote the transfer of knowledge, replication, and scalability of successful experiences (European Commission, 2020).

In Ecuador, the Third National Communication of Ecuador on Climate Change 2017, details the main barriers, needs, and opportunities for an adequate management of knowledge about climate change. Ecuador has achieved important progress regarding the generation, management, and access to information, indicators, and databases. There are platforms for accessing this information at the national, regional, and local levels, related to economic, productive, social, educational, and geographical aspects, among others. The MAAE, since 2010, has the Unique Environmental Information System (SUIA) (*as its acronym in Spanish*). This tool seeks to integrate all environmental information in a single platform that uses a web application developed for the management of environmental procedures and projects. Within the SUIA there are some systems, among which there is the Environmental Knowledge Repository, conceived as “an interactive space (...), composed of different technological tools used to access, share and disseminate specialized knowledge regarding the environment, aimed at the academic community and to the population in general” (Ministry of the Environment, 2017).

However some barriers have been identified, such as poor coordination and articulation between sectors that generate and transfer knowledge on climate change. Among others, there are scarce resources to strengthen the climate knowledge management processes, and thus the lack of institutionalization, specifically to optimize the financial and technical resources of the existing technological infrastructure. As well as insufficient personnel with capacities to interpret, manage and transfer knowledge on climate change. To address these challenges, the MAAE identified, among others, some needs and opportunities such as the development of a Knowledge Management strategy that will promote effective processes, spaces, and platforms for the exchange of information and experiences on climate change. In addition, to include the knowledge management component as a transversal axis in the development of projects on climate change and assign specific budgets.

In Galapagos, various organizations generate and manage a wide variety of data and information about the Galapagos ecosystems, human settlements, land use, oceanographic and climate variables, among others. The organizations that handle information and knowledge include government institutions, public and private universities, and international NGOs. However, the data they collect and the information they generate is especially focused on conservation and research, or regarding information on human demographics within the inhabited islands.

These organizations share some challenges and needs with regards to the management of knowledge. These include the lack of institutional capacity for the management, interpretation, and transfer of information and knowledge. As well as, limited internet connection, to conceptualize decentralized information platforms for knowledge transfer and exchange. Also, limited inter-institutional cooperation for the transfer of information and data, and limited public access to information through interactive online portals. Hence, the need to promote inter-institutional collaboration, the strengthening of capacities to manage information and knowledge, to promote exchange and transfer between organizations, and grant access to knowledge to the general public. Finally, although these organizations play a key role in generating information and knowledge to

inform decision-making based on evidence, raise awareness, mobilize public opinion, and to strengthen teaching-learning processes, very few have projects or initiatives related to climate change. Besides there is little emphasis on the processes of transfer, exchange, and dissemination of knowledge to the local community, journalists, educators, and the public, through informational and educommunication platforms and tools.

3.2.2 Description of sub-activities and outputs

To achieve the proposed objective, the following sub-activities and outputs are proposed:

Sub-activity 2.1. Develop a knowledge management and outreach digital platform that makes updated and relevant information, knowledge, lessons, and resources regarding climate change in the Galapagos, understandable and accessible to the general public and key stakeholders.

Based on the aforementioned innovative approaches and methodologies for the communication on climate change, this activity seeks to promote the management, exchange, and transfer of information and knowledge which is relevant to climate change in the Galapagos.

To achieve this, an online, web-based platform will be developed for the management of knowledge on climate change in the Galapagos. This will facilitate the access and transfer of knowledge, promote the exchange of good practices and lessons learned, and the articulation of efforts, aimed at the general public, including key stakeholders linked to the Program, and decision makers.

This will be a collaborative platform that holds a high quality and timely content.

The structure of the platform will facilitate access to information and knowledge, promote exchange, interaction and articulation between stakeholders that produce and use knowledge at a local, national and regional level including beneficiaries, practitioners, researchers, managers and policy-makers in the public, private and civil society sectors related to this Program.

Aiming to reduce gaps and lack of coordination between research, policy and practice, this platform will serve as an open-source tool that facilitates two-way communication and articulate efforts between stakeholders regarding climate change. As well, this platform will give visibility and disseminate the information generated throughout this Program, and other relevant initiatives.

The specific objectives of this knowledge management platform will aim to:

- Systematize and make available information on priority aspects on climate change relevant to Galapagos context, generated by the Program and already available from other projects/partners.
- Develop consultation tools and educommunication products so that information, experiences, and knowledge can be transferable, disseminated, and used by the relevant actors;
- Generate opportunities for capacity building, knowledge transfer, and exchange of experiences in order to improve climate change management;
- Promote the production of information in response to the knowledge gaps identified through the platform;
- Showcase the overall scope, objectives, and progress of the Program.

The development and implementation of this platform will involve some key aspects. First, the design of the backend and frontend structure of the platform will rely on a deeper diagnosis of existing experiences of similar platforms in the region and globally, focusing on the opportunities and lessons learned. Considering that, there is a wide variety of knowledge management platforms, at the global and regional levels, which are focused on climate change, it is essential to evaluate, adjust, adapt, and integrate the best practices and lessons learned from these experiences within the framework of the specific objectives of this platform. In addition, and with the goal of adding value, complementarity, and long - term sustainability to this platform, links and alliances with the most relevant existing platforms and networks to the Program will be generated.

Another key aspect is the generation of protocols to carry out the processes of systematization of the information and existing experiences, for the design of educommunication products that facilitate the understanding and transfer of this knowledge to specific audiences. In the same manner, for the identification of knowledge gaps, for the processes of exchange of lessons learned, and for processes of capacity building, among others. As well as the creation of tools or mechanisms that promote the generation, exchange, and practical application of knowledge on climate change in the Galapagos.

Considering the aforementioned specific objectives of the platform, and based on the diagnosis presented in this document, it is proposed to include the following preliminary sections within the platform:

- Repository with systematized information and data relevant to climate change in the context of the Galapagos (studies, reports, documentation, publications, etc.);
- Resources regarding the work carried out on climate issues under the Program and other existing tools (climate tools, scenario viewer, practical cases, etc.);
- Educommunication resources and materials for decision - making, awareness, and training on aspects of climate change (guides, videos, infographics, etc.);
- A space to disseminate events (online or in person), calls, and other outreach and networking activities relevant to the Program;
- Repository of information and a useful database to connect with other platforms, networks, organizations, and experts with a focus on climate change, at the nationally and internationally levels;
- A space with specific information about the Program (process reports, etc.);
- A space to link and access the e-learning platforms within the framework of the Program (Innovation Lab of Component 2) and other existing ones (i.e. UNCC-Learn, etc.);
- A section with news regarding the progress of the Program and issues relevant to climate change.

This platform will have a communication and outreach plan to disseminate updates within the framework of the platform and its specific sections, linking to social networks and sending mailing through informative digital newsletters. Furthermore, we will disseminate relevant and updated information on climate change for key stakeholders through complementary digital and on-the-ground communication interventions, through the implementation of sub-activity 2.2.

Another key aspect will be the development of a capacity building and knowledge transfer plan so that technicians from government institutions, responsible for the operation of the platform (CREG and DPNG), can interpret and translate knowledge on climate change into applicable contents and tools. In addition, to be able to develop tools to improve the flow of information and promote spaces for the exchange of knowledge and experiences.

Finally, the development of a strategy to guarantee the institutionalization, financial sustainability, and scaling potential of the platform is another fundamental aspect that will be fully addressed through this activity.

At the end of this sub-activity, the following outputs are expected:

- A climate change knowledge management and outreach digital platform that gathers available and relevant information on climate change in Galapagos, is developed.
- A communication and outreach plan, linked to the platform, delivers general communication and education climate change-related materials to key stakeholders.

Sub-activity 2.2. Develop and implement a communication strategy based on innovative approaches and methods, to strengthen knowledge and foster commitment for the adoption of climate change mitigation and adaptation measures.

A communication strategy that combines innovative approaches and methods will be developed to strengthen knowledge, interest and foster commitment of the Galapagos community about the risks of climate change and the importance of adopting mitigation and adaptation measures.

Understanding the individual and contextual factors, barriers and motivators influencing attitudes, decision making and behaviors of key stakeholders and the general public in Galapagos, will be crucial to design and deliver efficient and impactful communication interventions. The behavioral insights analysis that will be conducted as part of this Program, executed by the Behavioral Insights Team (BIT) will provide key behavioral insights to identify root-problems and barriers for each target audience.

Based on these findings, and in combination with existing data and other relevant information and experiences, we will focus on those behaviors that can be effectively addressed by communications, and then we will design the communication strategy.

The strategy will integrate a diverse variety of communication techniques, methods, and resources, to facilitate people's awareness, knowledge, attitudes, engagement and empowerment for climate action. As a basis, a participatory communication approach will be integrated, by actively engaging with key stakeholders from the beginning of the Program in a two-way communication approach, building mutual trust, understanding, and motivation.

As part of this strategy, a cross-cutting content plan will be developed around the overall objectives of the Program, including relevant information and knowledge on climate change, as well of the Program progress, milestones and good practices undertaken by

the key stakeholders. The overall climate change content plan and Program narrative, based on storytelling techniques and integrating behavioral principles for effective communication, will be generated by identifying the core aspects of the Program and key messaging for specific objectives and audiences.

In line with the overall Program narrative and content plan, this strategy will encompass a variety of graphic, audiovisual and written communication resources that will be disseminated through multi-channel and multi-platform approach. Amongst others, a social media plan will be developed to widely disseminate and promote the content strategy, as well as other informative and educommunication materials (infographics, animations, videos and supporting printed material for workshops, etc.). Complementary to social and digital media plans, a traditional media outlet plan will take place, including a free press and specialized media coverage, media trips to the field and capacity building.

At the end of this sub-activity, the following outputs are expected:

- A behavioral-informed and comprehensive climate change strategy is designed and implemented, integrating innovative and effective communication approaches, methods and tools.
- A cross-cutting content plan will be developed through a variety of graphic, audiovisual and written communication resources, and disseminated through a multi-channel and multi-platform approach.

Sub-activity 2.3. Develop a behavioral change campaign that integrates knowledge based on the behavioral analysis, focusing on those behaviors that can be effectively addressed by communications interventions.

Considering that campaigns that only provide information and seek to influence attitudes have proven to be a weak strategy upon influencing behavior change (RARE and BIT, 2019), the campaign proposed within the framework of this Program will integrate the

principles of behavioral sciences into collaboration and provision of counsel on behalf of noted experts on this field, such as BIT.

When defining strategies based on behavioral sciences, we must consider how we can achieve our objectives in a more efficient manner and thus achieve a greater impact. Considering that, the Program, through its other components, will work with a focus on climate change from the perspective of supply within the value chain of agricultural and fisheries products this campaign will seek to complement these efforts from the perspective of the demand. For example, one of the problems identified in the framework of the Program is the degradation of terrestrial ecosystems due to the proliferation of invasive species within the agricultural areas of the islands, which in turn are enhanced by the drivers of climate change. From a supply (producer) perspective, the target behavior would be to adopt sustainable land use and agroforestry practices. While from a demand (consumer) point of view, the target behavior would be to increase the purchase of climate - friendly and sustainable local harvested crops.

The behavior change campaigns focused on consumers, when conceived upon the basis of a deep understanding of the factors and motivators that influence behavior, can have an expansive effect on markets. Evidence shows that addressing the individual challenges or incentives of consumers through Behavioral Change Communication (BCC) is a valid strategy in order to hold influence upon suppliers and markets. “What looks like an individual nudge or incentive can equally be used to shift business behavior or to fundamentally tip the incentives in a way that leads to a widespread effect” (RARE and BIT, 2019). For example, a significant proportion of aware and engaged consumers can force and demand suppliers to be more competitive in product traceability, distribution channels, and/or pricing.

The campaign will be designed and implemented based on models, frameworks, and tools from behavioral sciences, climate change communication, educommunication, social marketing, and advertising.

Considering the SBCC framework described above in Section 3.2, this campaign will include a mix of the three strategic approaches of SBCC: behavior change communication (BCC), social/community mobilization, and advocacy. BCC will use mass and social media community level activities and interpersonal communication for changes in knowledge, attitudes and practices among specific audiences. Advocacy to raise resources as well as political and key stakeholders' commitment to develop actions and goals. Community or Social mobilization looks for a wider participation, coalition building and ownership (USAID, 2013).

It will also incorporate elements of social marketing that integrate traditional marketing concepts along with other innovative approaches, in order to influence individual and collective behaviors, where its main objective is to achieve a positive social change. Unlike traditional marketing that seeks to achieve a financial and commercial goal, many of the social marketing campaigns hold specific components targeted towards behavioral change.

From the point of view of the consumer, the campaign will integrate the 4 P's of marketing (Product, Price, Place, Promotion, Channel distribution) holding a behavioral approach. The 4 P's of marketing of the CDCynergy Social Marketing Edition, point towards the following objectives:

- Product represents the desired behavior you are asking your audience to embrace, and the associated benefits, tangible objects, and/or services that support behavior change.
- Price is the cost (financial, emotional, psychological, or time-related) of overcoming barriers the audience faces in making the desired behavior change.
- Place is where the audience will perform the desired behavior, where they will access the program products and services, or where they are thinking about your issue.
- Promotion stands for communication messages, materials, channels, and activities that will effectively reach your audience (CDC, s.f., p.12).

Therefore, this campaign seeks to influence upon the consumption choices towards local, sustainable, and climate-friendly products for consumers in the Galapagos, both of commercial buyers of food products, as well as of the end-users, and in this manner support the transformation of the Galapagos food system towards a greener and more climate-friendly one.

On the one hand, the campaign will seek to increase consumer awareness, at both an individual and collective level, on climate change and its effects upon the Galapagos food system. To promote a surrounding environment where the local community supports and facilitates the adoption of mitigation and adaptation practices on the part of the key stakeholders of the value chain of artisanal fishing and local agriculture. And finally, to reduce barriers for the demand and access to climate-friendly products and services within these value chains.

With a base of awareness and knowledge on the subject, we aim to develop and make the incentives and mechanisms accessible in order to facilitate consumers making responsible and sustainable consumption decisions. As has been demonstrated, holding sufficient awareness of an issue does not necessarily translate into a change in behavior (Rare and BIT, 2019). Therefore, it is necessary to strengthen and make accessible to consumers the tools, skills, and incentives so that they can exercise their power as consumers (BCC). On the one hand, to advocate in favor of the existence of commitments on behalf of the different actors in order to guarantee traceability and good practices throughout the value chain of food products (advocacy). On the other hand, so that they are able to make informed consumption decisions that can be sustained over time (BCC). And finally, to inspire and hold a positive influence within the decision-making environments of other consumers and within the consumption patterns at the local community level (community mobilization).

While work is carried out regarding the necessary conditions for the adoption of mitigation and adaptation measures within the productive, agricultural and artisanal fishing sectors

of the Galapagos, this activity seeks in a complementary manner to generate the enabling conditions from the side of the demand. In this way, by linking the climate - friendly food products with the local buyers and end - users who are aware, motivated, engaged, and are able to purchase these products, we will be closing the cycle so that a systemic change at the value chains level of these products be existent.

The application of the framework implies to recognize and reflect upon the design of the campaigns the insights of human behavior. In this sense, with the support of experts in this area (BIT), a behavioral insights analysis will be carried out. Under the methodologies used by the BIT, this analysis will begin prioritizing the key actors in the value chain of the agricultural and fishery products, then the behavioral goals will be defined according to the key actor; and the motivations, barriers, and other aspects or contextual factors that have an influence upon the desired behaviors will be identified. The campaign will build on this analysis as well as on the existing research, knowledge and experiences on this matter.

The design of the campaign will consider the key elements that have been shown to be successful in social marketing campaigns and climate change communication, which have been described above. It will focus on the main drivers of consumer behavior change in the Galapagos, which can be effectively addressed through the communication interventions.

The per audience specific objectives of the campaign will be defined once the results of the analysis of the behavioral insights are available. From them, work will be carried out on the definition and final creation of the key messages, materials, and dissemination plan for each of the three elements of the SBCC. Among some of the key tactics and tools that will be integrated are the social media tools, educommunication materials, BTL interventions, among others. The plan to implement the campaign will guide the development, implementation, and evaluation of the behavioral change interventions.

At the end of this sub-activity, the following outputs are expected:

- A Behavioral Insights Analysis focused on food consumers in Galapagos, is designed and carried out.
- A social and behavioral change campaign focused on consumers regarding fisheries, agriculture and tourism value chains in Galapagos is designed and implemented in the four populated islands.

3.3 ECM Action 3. Facilitate non-formal education and mobilization opportunities, to encourage youth and local empowerment on climate action.

This action aims to implement action-based, non-formal educational and outreach experiences to foster youth and community empowerment, engagement and leadership on climate action, by providing them with practical knowledge, tools and skills, and most importantly, the opportunity and agency to translate those into climate action.

Preparing youth and adults for individual and collective action towards climate change could be done from a multiplicity of education models or approaches in a non-formal field: education for sustainable development, education for global competence (OECD, 2016), lifelong learning, experiential-education, among others. When analyzing and comparing such models, it becomes clear they all share a common goal of developing competencies. A competency is described as a combination of knowledge, skills, attitudes and values successfully applied (OECD, 2018). The KSA model, for example, consists of skills (what one has) combined with knowledge (what one knows) and attitudes (what one believes and values), that constitutes a set of competencies (what one can do). Competencies are the result of a KSA network or set of networks. Whereas much of environmental education has focused on knowledge transfer, research shows the importance of competencies to successfully apply what has been learned (Kwauk, C., Braga, A., 2017).

Drawing from the need of systemic change to tackle climate change, the 4-step process (Kwauk, C., Braga, A., 2017) described below provides a framework for the consecution of this activity and its importance toward achieving the broader goal of this project, and of climate action in general:

1. Building competencies
2. Translation and mediation
3. Empowered action
4. Improved life outcomes
5. Systemic change.

It is imperative to consider how to transform competencies into empowered action. According to Kwauk and Braga (2017), there are two factors which contribute to translation and mediation of competencies into action: opportunity and agency.

In that sense, and focusing mostly on the need for agency, research also shows the importance of competence and autonomy as building blocks for self-determination, and how autonomy and agency develop when youth are given the opportunity for self-direction and choice making (Hui, E. Tsang, S, 2012). This strongly relates to the importance of deep engagement, as means to promote agency and, therefore, enduring change for climate action.

Tackling climate change depends on enduring change. Climate science analyzes social aspects that can enable or prevent changes in attitudes and behaviors. Most importantly, it looks into how those changes prevail throughout time (Goldberg et al., 2020) In that sense, deep engagement has proven to be fundamental to promote enduring change. From an education perspective, deep engagement is understood as active thinking about a certain issue originating from a personal perspective and connection with the issue. Taking this personal standing as a starting point will consider relevant personal aspects such as current situation, values, and consequence.

Deep engagement learning experiences in a non-formal field can happen in many ways, and this action will take this perspective into consideration across the three sub-activities, which will be further described below.

Through lifelong learning, action-oriented and experiential education approaches, this activity aims to prepare youth and adults for individual and collective action towards climate change by developing the necessary competencies for active citizenship.

As identified by the ACE, training processes for facilitators are a key element to promote empowerment of the population towards climate action. Galapagos currently has personnel responsible for processes of communication, education, and environmental

participation (CEPA), among them, park rangers, technicians and focal points from different governmental instances. Additionally, to this personnel from government entities, civil society organizations as well as other relevant local actors also have people involved in environmental and conservation processes. These are all people who, - because of the nature of their duties -, work very closely with the territory and its conservation and therefore can assume a key role as potential facilitators of social transformation processes to face climate change.

Therefore, strengthening the capacities of these facilitators to integrate a climate change approach into their CEPA programs and plan is a cost-effective and sustainable strategy in the long term. Guided by what has been learned in the capacity building program and aiming to contribute to processes of community social transformation in a context of climate change, participants will be able to play an active role as facilitators to promote local climate action. Among the skills which will be learned by these facilitators, those related to experiential learning will be key to promote deep engagement processes with Galapagos' civil society.

Experiential-based climate change activities enable people to construct knowledge in a social manner and satisfy three basic human needs: competence, autonomy and relatedness, which subsequently promote motivation to act towards climate mitigation and adaptation.

As mentioned in Section 2.4, immersive field-based experiences in Galapagos are scarce and the only existing programs are directed to a tiny portion of the population (teenagers). Therefore, the experiences proposed by this project will also include adults, particularly key actors within the local community, to promote practical knowledge and skills to address climate change by connecting them to their natural environment and local conservation initiatives and research projects focused on climate literacy.

However, this action not only addresses how to develop competencies among Galapagos civil society. Through sub-activity 3.3, the training programs proposed in this action will be put into practice and translated into concrete and tangible actions.

Collaboration from an inclusive and intergenerational approach is key for people who are looking to promote climate action. Youth specially, are looking to engage from a space of equality, where they can actively participate, make decisions, and get the opportunity to translate training into action. This becomes more relevant when considering that 75% of youth in Ecuador have somehow been affected by climate change (U-Report Ecuador, 2019).

Moreover, civil society engagement with climate action in the Galapagos must be approached from self-determination and choice making, increasing empowerment through agency and efficacy. Only through empowerment will individuals engage in long-term climate collective action.

Therefore, immersive-field based, non-formal education experiences, capacity building and training activities, and the promotion of youth and community-based initiatives and actions, proposed in this project, will promote a deep engagement of youth and adult citizens of Galapagos towards individual and collective climate action.

The target indicators for ECM Action 3 are described in Table 6, together with the direct and indirect expected beneficiaries.

Table 6: target indicators and beneficiaries for ECM Action 3.

Target indicators:
At the end of the project: <ul style="list-style-type: none">- At least 75 participants of a training program on climate change for facilitators designed and implemented in Santa Cruz and San Cristobal Islands.

<ul style="list-style-type: none"> - At least 25 non-formal educational and immersive field-based experiences on climate change in the four inhabited islands - At least 300 citizens of the four inhabited islands have been trained and are part of the working platform on collective climate action. - At least 20 independent youth and community-based projects or initiatives are initiated and have been successfully completed or are still under development. 	
Beneficiaries:	
Direct	<ul style="list-style-type: none"> - 20 staff members of GNPD, 10 of CGREG, 10 of local governments, 10 staff members of MAG, Mintur, ABG. - 30 staff members of Galapagos based NGO, local civil society organizations and local professionals - 300 citizens
Indirect	<ul style="list-style-type: none"> - 25,000 residents of the Galapagos - Local key stakeholders of the Program (300 fishermen and their families, farmers, tourism operators)

Table 7: logic framework for ECM Action 3.

Action 3: Facilitate non-formal education and mobilization opportunities to encourage youth and local community empowerment on climate action.		
3.Facilitate non-formal education and mobilization opportunities to encourage youth and local community empowerment on	3.1 Develop a capacity building program for non-formal facilitators (government officials, NGOs, community leaders) to increase their understanding and practical application of climate change approach into communication, community outreach and non-formal education interventions.	<p>-A training program for facilitators of communication, non-formal education and mobilization processes on climate change through a project-based learning methodology, is designed and implemented on Santa Cruz and San Cristobal Islands.</p> <p>-A training-of-trainers strategy for the replication and scaling of the program, is developed and implemented in the four populated islands.</p>
	3.2 Develop immersive field-based and non-formal educational	-At least two immersive field-based experiences regarding climate

climate action.	experiences for different audiences, to connect the local community with the natural environment and climate change mitigation and adaptation initiatives.	change, designed and conducted every year in each inhabited island.
	3.3 Create a permanent working platform that brings together existing organized groups and citizens towards collective climate action, through capacity building and the implementation of pilot youth and community-based projects.	<p>-Citizens of the four populated islands, have been trained and are part of the working platform on collective climate action. - Independent youth and community-based projects or initiatives are initiated and have been successfully completed, or are still under development.</p> <p>-Local community leaders have been trained as facilitators of the working platform and lead their own independent groups towards collective climate action, through on the ground projects and initiatives.</p>

Executing entities for ECM Action 3

Considering WWF experience and current role leading processes for youth mobilization at a national and regional level (WWF Youth Communities and Generation 10), fostering community-lead sustainability projects, and implementing training programs for adults in communication and education for sustainable development at a national level, this organization will be the main executing entity for this activity, and together with EPI specifically for sub activity 3.2. On the other hand, the Galapagos Governing Council and the Galapagos National Park Directorate (communication and education staff) will be executing partners (sub activities 3.2 y 3.3), as well as other experiential education programs like Galapagos Infinito (sub activity 3.2).

3.3.1 Description of the current situation and baseline

In relation to training processes on climate change, the Third National Communication of Ecuador on Climate Change 2017 showcased some of the efforts and initiatives at the

national level. The MAAE, through the Secretariat for Climate Change, has worked towards strengthening knowledge, capacities, and participation of public, private, and civil society actors to face climate change. As of December 2015, around 130 thousand people had been trained on climate change mitigation and adaptation measures implemented in various areas of influence of the projects that are coordinated by this undersecretariat (Ministry of the Environment and Water, 2017).

In addition, through the platform of the SUIA, there is a Virtual Classroom for training processes aimed at Ministry personnel. These include training for institutional and community environmental promoters carried out by the Directorate of Environmental Education, and Aula Verde, targeted to park rangers of the protected areas of the National Directorate of Biodiversity, where climate change issues are addressed in a very limited manner.

On the other hand, there are also experiences of capacity building programs on issues regarding climate change, supported by international cooperation. For example, with support from IUCN and GIZ, a program is implemented with the aim to train and reinforce the understanding of climate risks and to strengthen resilience by integrating the ecosystem-based approach (ABE), aimed at local and national authorities, communities and other actors from the country's coastal regions.

Although there are efforts being carried out by the public sector and civil society, these are still insufficient. Among the challenges identified by the Ministry of Environment (2017) to tackle climate change, limited funding to promote activities targeted towards the strengthening of capacities was among the main challenges. Challenges also include the limited research processes on climate change, which prevents building the capacities of the institutions involved, and the few incentives for knowledge sharing for personnel that hold skills regarding issues related to vulnerability and adaptation to climate change. Therefore, there is a need to facilitate processes and programs at national level, aimed at technical personnel and decision makers belonging to the public and private sector,

with the aim of strengthening skills, continuous training, and updating knowledge related to management of adaptation to climate change.

Although public institutions and NGO based in Galapagos do have some programs and capacities on education, training, communication and social participation regarding environmental aspects, there have been very few initiatives which adequately integrate a climate change focus. According to the technical personnel of the CEPA Program from the PNG, which were interviewed for the development of this feasibility document, there is no knowledge or qualified personnel on climate change issues that can be integrated and contribute towards their communication and non-formal education processes. However, they expressed great interest in building this capacity and developing initiatives focused on climate change, if they received the necessary support. A clear example of this lack of skills is evidenced in the fact that the refresher course for naturalist guides did not address the issue of climate change in depth. There were only a few scientists who shared some research findings related to climate change; moreover, it being isolated scientific information.

Therefore, there is an imminent need to strengthen the knowledge and skills of technical personnel and CEPA professionals, both in the public and civil society sector, to integrate key aspects associated with climate change as a transversal axis in all communication, training, social participation, and non-formal education efforts existing in the Galapagos, both for young people and adults.

Nevertheless, it is important to acknowledge the several immersive experience learning opportunities offered in Galapagos, many taking place as collaboration between NGOs and the public sector. However, none of them focus on climate action. For the past 8 years, Ecology Project International (EPI), in collaboration with the Directorate of the Galapagos National Park (GNPD), has been developing immersive in the field programs to involve different sectors of the community in action - conservation and citizen science programs. One of the most notable is the environmental education and citizen science program for the protection of the green turtle at the Tortuga Bay public site, which has

inspired the Santa Cruz community to join the conservation efforts being carried out to protect this flagship species.

The program consists of training youth from the community aged 17 to 25, on the monitoring protocols of this species as well as on the ecology and its threats. This training is done together with personnel from the GNPd marine conservation area during a 3-day camp located at a nesting site. Once trained, this group of young guardians commits to monitor and protect the turtle nests on Tortuga Bay beach throughout the nesting season, which runs from February to May. They do so through visits to the beach 3 times a week accompanied by scientists or park rangers. The participants locate and enclose the nests, as well as gather data to be handed over to the monitoring program carried out by the GNPd. These young people also provide information to local and foreign visitors to the beach, and visit local schools to create awareness among children about the importance of care provision for this species. In addition, once a week, usually on Saturdays, this outing is open to the community for those interested in joining the monitoring activity. The young guardians serve as guides to people that visit the site, to whom they explain step by step the tasks of monitoring and the problems this species must face. The community, in a practical manner, has the opportunity to get involved in a conservation activity led by a previously trained local young guide. This program has been carried out for eight consecutive years, involving more than 100 people each year. Like this experience, EPI has carried out science - action programs focused on the control of invasive species, monitoring of mesoplastics on beaches, the protection of wildlife due to speeding and coastal cleaning, among others.

Other programs, promoted by organizations of the Galapagos civil society, include Tibu-ambassadors from the Charles Darwin Foundation (FCD) (*as its acronym in Spanish*), Earth Echo, Nave Educando by the local Galapagos Infinito Foundation, Mola Ecology Club, Jóvenes en Acción. Children and youth from Galapagos have also been involved in experiential programs with the aim of creating environmental awareness and a greater sense of appreciation for the fauna and flora of the Galapagos.

Within this context, it is of vital importance that the organizations and actors responsible of non-formal education processes promote immersive educational activities focused on the adaptation and mitigation of climate change related issues. Such processes must be targeted to different audiences, from children to adults. Through these activities, the population of Galapagos would improve their knowledge about climate change and thus gain skills to adapt to climate challenges.

However, and considering Galapagos' current non-formal education context, it is fundamental to consider how to translate education into action. Civil society engagement tends to be either focused on training, creating spaces for dialogue and experience exchange, or specifically on accompanying or financing projects. Nevertheless, in Ecuador and Galapagos there are very few initiatives which combine all three aspects and effectively promote long-term action, and even less those integrating a climate change focus.

In order to understand how to promote climate action, it is necessary to understand how civil society is currently engaging with this field, beyond the national context. Capacity building for youth and adult citizens and civil society empowerment towards climate action currently takes place in different ways. For the sake of this analysis, identified actions have been grouped as follows:

- Practical guides: This category can be divided into two subcategories. On the one hand, guides for youth, such as “Acción climática local: Una guía para jóvenes de América Latina” by Engajamundo and the Red Regional de Cambio Climático y Toma de Decisiones (2020), which focuses on the development of advocacy skills, including communication, activism and lobbying. On the other hand, there are multiple guides for educators, that range from activities, to entire resource packs and curriculums connected to climate change (UNCC Learn). Nevertheless, this was only implemented through schools. In both cases, guides focus on providing theoretical knowledge on climate change and practical skills for climate action.

- Online Exchange and dialogue platforms: These tend to provide spaces for dialogue and discussion amongst civil society actors, especially youth. For example, “Hacé Click” provides online webinars focused on climate change advocacy (Engajamundo, Red Regional de Cambio Climático y Toma de Decisiones, 2020). On a global scale, the UNCC created “Youth Climate Dialogues” (2015), a space to promote discussions on climate change, connecting groups of students across the globe. Similar spaces have recently emerged with a bigger focus on innovation, such as Sense Camp Latam (Make Sense, 2020), a digital festival for socio-environmental innovation. Online platforms are broadening their scope of impact, looking to connect and provide training, through a digital space. In that sense, both Voices of Youth (UNICEF, 2019) and Generación 10 (WWF-Colombia, 2020) have been successful in bringing youth together and providing tools for action.
- Experiential education: As mentioned above, most non-formal education programs in the Galápagos tend to fall under this category. These programs aim to connect children and youth to nature through a variety of tools, such as science (TibuEmbajadores) or visual arts (PhotoVoice) and develop specific activities or short-term projects. These happen in the form of multi day camps, or single day events.
- Project development platforms, networks and movements: It is worth noting and mentioning youth-led movements such as Fridays for Future (Viernes por el Futuro Ecuador, 2019), which do have a branch in Ecuador. These groups have been mostly connected to climate activism and promote peaceful protests and demonstrations.

Although there are plenty of civil society groups in Galapagos related to environmental work, and these do tend to connect and coordinate actions, two challenges have been identified in relation to these groups and the initiatives they engage with. On the one hand, because of the number of actors engaged with conservation in the Galapagos, organized civil society groups tend to be short-term interventions and respond to a specific subject previously defined by NGOs or public sector institutions. Very few interventions have an

approach of self-determination, and take the communities' needs, perspectives, and interests as a starting point for their interventions. Consequently, civil society initiatives in the Galapagos tend to promote and engage in short-term interventions, as seen on social media platforms from various groups.

In that sense, two national programs stand out as initiatives that promote the development of collective projects from and for the community, therefore promoting an approach from self-determination and providing choice making, and focus on the development of competencies through the development process of such projects. FLACSO's (2019) Master Program on Leadership, Climate Changes and Cities, requires its students to complete projects of civil society engagement, aiming to analyze realities which are meaningful and close to the students, pose questions about real-life situations and develop solutions to concrete problems. On the other hand, "Laboratorio de Sueños", a program developed by UNICEF, PNUD, CONQUITO and TANDARI (2020), helps youth identify sustainability issues in their neighborhoods, and co-develop solutions for those problems. It provides accompaniment, training, networking, and even financial support.

Recently, WWF-Ecuador has created the "Quito Youth Community", by implementing a model for youth empowerment which is being tested by WWF in different cities around the world. The model works with a group of young people through an eight-month period, looking to develop competencies for empowered action through three pillars: reflection, action and connection. Guided by Design Thinking, youth identify problems in their locality, relevant for them, and develop solutions for these problems.

3.3.2 Description of sub-activities and outputs

To achieve the proposed objective, the following sub-activities and outputs are proposed:

Sub-activity 3.1. Develop a capacity building program for non-formal facilitators (government officials, NGOs, community leaders, among others) to increase their

understanding and practical application of climate change approach into communication, community outreach and non-formal education interventions

To achieve the proposed objective, this sub activity will design and implement a training program aimed at potential facilitators and promote local climate action. The beneficiaries of the training program must be professionals or technical personnel from government institutions in Galapagos that are working within the framework of the Program, NGOs, civil society organizations that in their field of work apply communications, non -formal education, and environmental participation. As well as community leaders and other local actors.

The program will be framed within the EDS (Education for Sustainable Development) (as *its acronym in Spanish*), where non - formal education is valued as a process of social transformation holding a vision of responding to climate change. The appropriation, contextualization, participation, social and cultural relevance are fundamental criteria of the ESD, that will be integrated through different approaches, methodologies, and tools to guarantee a meaningful teaching-learning process. Through this program, we will be contributing to the educational, communication, and participation programs and plans of these facilitators, leaving the capacity to integrate the climate change approach installed, through innovative, efficient, and sustainable methodologies and tools projected towards the future.

As stated by ACE, training programs seek to disseminate specific skills that may have immediate practical applications (European Commission, 2020). In this sense, the participating facilitators will be trained in specific skills to transfer key knowledge about climate change. Above all, they will have the facilitation and pedagogical skills to promote processes of advocacy, involvement, empowerment, and mobilization of the local population towards solutions enabling them to address the causes and face the impacts of climate change on the islands.

Considering that the practical application is a key aspect in the training of facilitators, this program will integrate, in a transversal manner, a Project Based Learning (PBL) methodology to ensure a meaningful, experiential, autonomous, critical, creative, and collaborative learning. The PBL is an “active and globalizing” methodology that responds to the ways that people learn and allows learners to acquire practical tools to adapt to changing scenarios in the world (UNICEF, 2020). Hence, the relevance of this methodology, since the participating facilitators must prepare to face the impacts of climate change on the islands in a post - covid context.

The application of the PBL in the program will seek that the participants, as its central axis, assume an active role in their learning-teaching process, motivated by obtaining a concrete result (European Commission, 2020), through the construction of collective projects, adapted to the local reality and the needs of the final beneficiaries.

The results of these projects will meet different objectives, through communication, non-formal education and community outreach strategies. Among which are, to provide a response or solution to a specific situation or problem with respect to the different scenarios that climate change supposes on the islands. To investigate or evaluate an impact or consequence of climate change. To address a specific issue or complex subject related to climate vulnerability. To design, elaborate, or build a specific product to contribute to mitigation and/or adaptation measures (UNICEF, 2020). Always seeking to actively involve the local community in these projects.

Being a type of training that will be aimed to adult facilitators and based on learning through practice, the participants will make use of the knowledge and skills acquired and strengthened within the educational training framework, through projects that actively involve the local community (children, young people, women, decision makers, farmers, fishermen, tour operators, etc.) as final beneficiaries of such projects.

Considering that the participants of the program are adults, pertinent pedagogical approaches and principles will be integrated for the training processes aimed at this

peerage group of the population: andragogy, recognition of prior knowledge, and inter - learning. Andragogy or education for adults, considers the person as a learning subject, considering their previous knowledge and experiences, through a dynamic, horizontal, participatory, and flexible process. This being a self-learning process where participants choose what they want to learn based on the interest and usefulness it represents for them in the practice (Knowles et al., 2005). In this approach, the recognition of prior knowledge is essential, since it starts by understanding the participant as a bearer of knowledge, experiences, visions, and social practices, recognizing their creative dimension and transformation potential (Crespo, 2005). And finally, it will integrate inter-learning, by understanding learning as a reciprocal action between people, groups, or collectivities (Crespo, 2005).

The development of the training program will be composed of different phases. i) Program design (learning structure) ii) Program implementation (through the PBL methodology) iii) Monitoring and evaluation (practice communities and co-evaluation) iv) Replication, scaling, and sustainability of the program (through the Training of Trainers methodology, TOT).

For the design phase of the training of facilitators, it will be necessary to carry out a diagnosis to fully understand the training needs, current capacities, motivations, expectations, and characteristics of the participants. It will also be necessary to systematize the experiences and lessons learned from relevant training processes with a focus on climate change. The results of these diagnoses are central elements to ensure a highly effective and impactful implementation. These central elements thus will be integrated into the educational approaches, pedagogical principles, and methodologies mentioned above, to adapt, adjust and structure the learning process and develop an exit profile according to the particularities of the context and the participants.

At the end of the training process, participants are expected to develop the knowledge, capacities, and tools to design and implement the CEPA programs, strategies, and initiatives with a focus on climate change. These will consider the needs identified in the

specific local environment, the characteristics of the final beneficiaries, as well as the specific skills acquired or strengthened within the framework of the training.

To this end, the learning objectives of the participants in the program include, among others, the ability:

- To understand, manage, contextualize, and transfer useful knowledge for climate action.
- To analyze the social, cultural, and economic reality of the beneficiaries within a context of climate change.
- To promote advocacy and mobilization processes within the territory.
- To reflect on their practices and the management of CEPA with the goal of sharing what was learned and to strengthen their knowledge with a focus on climate change.
- To draw up and support the formulation of projects that involve the community in response to climate change.
- To co-develop communication and educational tools for diverse audiences on climate issues.
- To structure activities that will promote collaborative production and creative interpretation of a climate change concept.
- To facilitate training processes for key community actors (fishermen, farmers, decision makers, etc.) applying relevant approaches, principles, and tools.

In this phase, the learning structure of the program based on the learning objectives will be developed, which will have thematic and methodological blocks made up of content modules and toolkits with practical resources and tools. On the one hand, thematic blocks will be developed in relation to climate change, focused on the causes, impacts, vulnerabilities, and mitigation and adaptation measures within the context of the Galapagos. In a complementary manner, blocks will be developed on innovative and highly effective approaches, methodologies, techniques, and tools for the facilitation of the CEPA processes in climate change. Among others, approaches such as behavioral

sciences, experiential education, place-based education, discovery learning will be addressed. In the same manner, methodologies such as design thinking, the ABP, action research; teaching - learning practices such as research - based, the centrality of the question for learning; ludic, artistic, and pedagogical tools such as games, puppets, theater of the oppressed, will also be discussed. Finally, yet importantly, effective communication tools such as storytelling, audiovisuals, and graphics; plus participatory tools such as active listening, group integration techniques, will also be covered, and so on.

In the implementation phase of the program, the PBL methodology will be applied in a transversal manner and throughout the learning process, independent of the program modality, be it face-to-face, online, or blended, this will be defined according to the evolution of the current health situation. Through the creation of collective projects that involve the local community as final beneficiaries, the participants will put into practice, dialogue, and converge their previous knowledge and experiences with what they have learned through the different modules of the program, integrating the theory, concepts, techniques and tools that compose them.

The results of these projects will meet different objectives and take different forms. An example of this would be for participants to understand the benefits of integrating the behavioral science approach to promote climate action, and to have the tools to apply it in a practical manner within the design of the CEPA interventions. Starting by having an in-depth understanding of the target audience and the factors that influence the changes in behavior, evaluating the insights of these analyzes, and integrating the behavioral principles within the design of interventions, the results of these projects could take different forms. From a campaign to promote social norms in favor of the consumption of food in the Galapagos, up to a training process adapted to the needs, motivations, and characteristics of the artisanal fishermen to promote the adoption of good fishing practices, among others.

The participants will have toolkits to support their learning process for each thematic and methodological block, which will include key content, pedagogical guides, a set of educommunication tools, and multimedia resources. In addition, during the learning process, the participants will co-develop, together with the tutors of the program -who's role is explained further below- specific resources with a focus on climate change for their application within the collective projects.

In a parallel manner, and as a monitoring and evaluation strategy of the program, learning communities will be created, where the participants and tutors will be able to share their experiences within the framework of the training. Also, to reflect on their practice, and to take with them the lessons learned to strengthen the practical application of the knowledge they have acquired. These mechanisms serve as powerful spaces for the exchange, collaboration, appropriation, reflection, motivation, permanence, and conclusions of the participants in the process, while accompanying the design and implementation of the CEPA projects. In addition, the process will have a formative evaluation strategy, which includes a self - evaluation and evaluations among peers.

Finally, to guarantee the replication, scaling, and long-term sustainability of this process, some participants will be trained as facilitator trainers (tutors) under the TOT methodology. These participants will be identified as meeting the criteria and conditions necessary to carry out this work further on as trainers/tutors of other potential facilitators to promote local climate action. These facilitator/tutor leaders will be in charge, among other aspects, of managing, fostering alliances, and coordinating the replication of the training processes by means of collaborative efforts. They will also co-develop materials and guides for the training of other facilitators, they will accompany the teaching - learning processes of the participants and will support the transfer and exchange of what was learned to a practical application of the climate change approach within the CEPA interventions.

Most importantly, these facilitators will be key for sub activities 3.2 and 3.3 described below. By acquiring these capabilities and capacities, the participants will be able to

accompany and facilitate immersive field-based experiences (sub activity 3.2). Furthermore, and from a TOT perspective, these facilitators will be fundamental in the training process of facilitators of the groups which are part of the citizen working platform for climate action (sub activity 3.2).

At the end of this sub-activity, the following outputs are expected:

- A training program for facilitators of communication, non-formal education and mobilization processes on climate change through a project-based learning methodology, is designed and implemented on Santa Cruz and San Cristobal Islands.
- A training-of-trainers strategy for the replication and scaling of the program, is developed and implemented in the four populated islands.

Sub-activity 3.2. Through immersive field-based experiences in the Galapagos, promote practical knowledge and skills to address climate change by connecting the local community to their natural environment and local conservation initiatives, integrating an experiential education approach.

Important and meaningful learning experiences are not limited solely to formal education practices and the curriculum. Extracurricular activities and educational opportunities outside of the scholar system have an important impact on the ongoing development of pro-climate attitudes in children, teenagers and adults. Opportunities outside the formal educational framework serve as complementary learning experiences that help the understanding of basic environmental principles of climate change and their link with people's habits and behaviors. The learning process doesn't stop after school, which is why learning opportunities shouldn't be limited to the scholar system. Unlike opportunities in formal education, non-formal education opportunities have a profound impact in the understanding of how collective actions and interactions are an important component towards building more sustainable communities. Through the implementation of place-

based learning experiences outside of school, we can ensure that the knowledge gained inside the classrooms is implemented in real life scenarios, deepening the importance of individual and collective actions towards the mitigation and adaptation to climate change.

The Galapagos community provides an excellent opportunity for coordinated and articulated learning experiences on sustainability and climate change due to the exposure to real life situations demonstrating the fragility of it's environmental systems. Based on the successful experiences carried out by the EPI and other immersive experiences in nature such as Explora Galapagos (WWF in collaboration with GNPD) and Galapagos Infinito mentioned above in Section 3.1.1, this sub activity consists of identifying existing programs and creating new ones through inter-institutional alliances showcasing the efforts and actions happening in the territory promoting the best practices for sustainability and mitigation and adaptation to climate change

This sub activity aims to work with multiple audiences of the community in Galapagos, ranging from children to adults of different backgrounds. These experiential learning opportunities will be undertaken under the previous experiences on non-formal education programs implemented by EPI alongside with the contents already created and with the development of new contents to foster climate literacy, and will be connected to the mitigation and adaptation to climate change efforts developed within components 1 and 2 of the Program.

This sub activity will be implemented through 1) one-day field trips coordinated with distinct institutions working on topics related to sustainability and climate change locally such as the Galapagos National Park, WWF, Charles Darwin Foundation, Galapagos Conservancy, Galapagos Conservation Trust, amongst others; 2) through multi-day educational camps involving climate change related topics and sustainability practices in coordination with other pertinent institutions as mentioned before; 3) through community monitoring programs and citizen science promoting conservation like the protection of green sea turtle nests done by EPI outreach program or microplastic monitoring at

different beaches done by Galapagos Conservation Trust, linking these topics to climate change related issues and their impact in the territory.

Furthermore, in the programs already in place, such as the education and citizen science for the protection of the green sea turtle, work will be carried out together with scientists, experts, and environmental educators to incorporate the perspective of climate change in the conservation issues of threatened species. These immersive field experiences regarding climate change, will be part of the Climate Change Education Agenda (sub activity 1.1.), where institutional efforts will allow the establishment of agreements and alliances between scientists, who are experts in climate change issues, and the community of Galapagos.

At the end of this sub activity, the following output is expected:

- At least two immersive field-based experiences regarding climate change, designed and conducted every year in each inhabited island.

Sub-activity 3.3. Create a permanent working platform that brings together existing organized groups and citizens towards collective climate action, through capacity building and the implementation of pilot youth and community-based projects.

Understanding how to engage civil society groups with climate action, outside of a formal education setting, is crucial for the accomplishment of this activity. Therefore, this sub activity will provide opportunities to tackle relevant and local climate change problems, as means to transform competencies into empowered action, by promoting the development of community based collective projects looking to involve participatory learning and problem-solving through a trial-and-error approach (We Adapt, 2007).

This sub activity will heavily draw on personal experience, personal perspective and local realities as the starting point and guiding principle for the intervention. Based on these personal and local connections with climate change, competencies will be developed from

a perspective of autonomy and self-determination. Additionally, research on collective action shows that individuals tend to engage in collective action when they believe their contribution will positively affect the group's success (S. Bamberg, 2015). Therefore, the process developed through this sub activity will promote collective action through the development of individual competences that will increase individual self-worth as means to promote collective action.

This sub activity aims to work with the multiple civil society and youth groups that already exist in the Galapagos and engage them on a long-term collective training process with a focus on building competencies for climate action, which will be transformed into empowered action through the development of community-based collective projects, as described in the following actions.

These actions, which will happen simultaneously, will begin by inviting and recruiting existing civil society groups from Galapagos that engage with climate change and environmental conservation, as well as other interested individuals, to be part of the process and establish a climate change working community. Arrangements on how often to meet will be decided as a group, based on the realities and interest of the members, to promote self-determination and decision making. Each cycle will take approximately 8 months to complete and will follow a project-based learning and design thinking approach to promote innovation, beginning with problem definition and concluding with a project implementation. Nevertheless, it is important to note the design thinking process is never ending, and its stages can be revisited along the way, promoting an agile and innovative approach.

The training process will focus on the development of competencies, understood as a combination of skills, knowledge and attitudes, (Kwauk, C., Braga, A., 2017) with a focus on identifying and solving climate change problems, chosen by the participants themselves due to the relevance and proximity to their everyday life and own value systems. Therefore, the learning process has a purpose and meaning from the beginning,

and it takes self-determination as a starting basis and guiding principle, promoting project-based learning by tackling real world challenges and problems related to climate change.

Training will take place throughout the process based on the different stages of the design thinking methodology. For example, for the empathy stage of the cycle, participants must conduct interviews of relevant stakeholders to better understand their realities and therefore improve the comprehension of their problem. At this stage, training will focus on conducting interviews, therefore developing skills such as active listening, values such as empathy, and knowledge about qualitative research, which can translate to the necessary competency to better understand climate change associated problems. Throughout the process, participants will acquire knowledge, develop skills, and build attitudes necessary to design and implement their projects to tackle climate change. Practical skills such as advocacy, campaigning, storytelling, soft skills, or 21st century skills such as leadership, communication, attitudes like empathy and responsibility all are developed and act together throughout the process of identifying a problem and designing a solution. These KSA networks translate into competencies which immediately are put into practice for climate action.

Besides working on their projects, youth are also engaging collectively along the way through initiatives such as a communications committee, campaigning committee, fundraising committee, and other general activities of the climate change working community, which connect groups and individuals beyond their projects and allow for collaboration amongst Galapagos civil society and strengthening the collective identity of the community.

The community will be accompanied by WWF which will act as coordinator and accompany the different groups and the community by promoting networking, assigning mentors, and in general, increasing the opportunity factor, which is crucial to translate competencies into empowered action. Most importantly, WWF will train local facilitators who will lead the group and sub-groups. Participants who have been trained as facilitators for climate action part of sub activity 3.1 will be key for this training, as they will either a)

become facilitators of this process themselves, or b) train the facilitators who will lead these groups. It is also important to note that groups will receive seed money to implement their projects as part of this opportunity aspect.

Once the eight-month cycle concludes, and in order to ensure long-term commitment and sustainability of the project, interested members can be trained as community coordinators, and continue the process independently, forming and guiding their own communities through identification of climate change problems and solution ideation and implementation. This community will be connected to other WWF Communities in the country, raising the potential of scaling up climate-change solutions to a national level. In the same line, WWF's regional platform "Generation 10" will connect these communities to other communities in the region to promote collaboration beyond the national level and even providing opportunities for exchange, which are very much needed in the Galapagos context.

Through Generation 10 platform mentioned before, and other platforms, the project will promote broadening of learnings, by empowering the community members as speakers on climate action. By sharing their knowledge and experiences, this activity will ensure further reach of the training, while strengthening the learnings and empowerment of the community members.

At the end of this sub activity, the following outputs are expected:

- Citizens of the four populated islands, have been trained and are part of the working platform on collective climate action.
- Independent youth and community-based projects or initiatives are initiated and have been successfully completed, or are still under development.
- Local community leaders have been trained as facilitators of the working platform and lead their own independent groups towards collective climate action, through on the ground projects and initiatives.

4. EXPECTED IMPACTS, TECHNOLOGIES, AND SOCIAL BENEFITS

4.1 Impact on the resilience of the Galapagos system

The education, communication, and mobilization efforts of the local community towards climate action will ensure the resilience of the Galapagos community against the potential impacts of climate change and other anthropogenic stressors on the Galapagos ecosystems and the environmental services they provide for human well-being. Therefore, it is crucial to strengthen the capacity of children, young people, and adults with knowledge, skills, and attitudes to assume a role as agents of change in their communities and thus contribute to the transformation of the Galapagos system towards a more sustainable, self-sufficient, and resilient one to climate change.

In order to reduce the vulnerability of the Galapagos community to climate change, this module aims towards building resilience and adaptive capacity through education, communication, and mobilization for climate action.

A greater awareness, predisposition, and capacity on behalf of the local community to act against climate change will bring significant benefits in order to achieve the positive social transformations necessary to promote the sustainable development and resilience of the Galapagos system. The initiatives proposed within the framework of this module are focused, among other aspects, on promoting the diversification of the local economy through technical education programs for young people from Galapagos related to the agriculture and fishing value chains. On promoting local food production and consumption through behavior change campaigns and formal and non - formal education experiences. On promoting efficient energy consumption as a mitigation measure through a strategy with traditional and digital media, among others.

In the short and medium terms, the interventions proposed within the framework of this project will have an impact upon children, young people, and adults in regard to the development and strengthening of climate literacy, pro-climate attitudes, self and collective efficacy, and agency (Armstrong et al., 2018) behavioral intentions, as well as

willingness to act. These aspects are interrelated and complementary to each other, in order to finally achieve the empowerment and capacity of the local community for individual and collective climate action.

Research on education for sustainable development, environmental education, and climate change communication suggest these as some of the expected impacts when implementing projects of this nature. On the one hand, climate literacy integrates the knowledge necessary to understand the problems and solutions that can be taken in the face of climate change, and the skills in order to act and address it over time. For example, some of the “climate - related skills” include communicating and participating in constructive dialogues on climate change (Armstrong et al., 2018), being these indicators adequate in order to achieve a lasting engagement upon this issue (Goldberg et al., 2020). As a consequence of increased climate literacy, the final beneficiaries are expected to develop pro-environmental and pro-climate attitudes. These attitudes are made up of the values, beliefs, and emotions that children, young people, and adults will develop in the face of climate change problems, which in turn will influence their behavioral intentions (Armstrong et al., 2018). Unlike knowledge, the values, beliefs, and emotions that people will develop regarding climate change, will be very particular to each person and thus will have different implications upon their intentions towards action (Armstrong et al., 2018). However, pro-climate attitudes will be key insofar as they lead to a predisposition to seek solutions to climate change.

In a complementary way, once the final beneficiaries develop climate literacy and pro-climate attitudes, we also hope that they will develop a greater sense of efficacy, which refers to the confidence that individuals or groups feel about their ability to be able to reach solutions and adopt pro-climate behaviors (Armstrong et al., 2018). Efficacy and agency are key aspects for achieving empowerment and, therefore, have a direct impact upon behavior intentions in order to adopt mitigation and adaptation practices (Smith et al., 2008).

The aforementioned impacts can be evaluated in the medium term in relation to the expected results regarding the education, communication, and mobilization actions that we will carry out within the framework of this project. These results will be evidenced both at an individual and at a collective level, as the proposed actions for education (formal and non-formal), communication, and mobilization, focusing on achieving changes at these two levels. In turn, they represent the enabling conditions that will allow the achievement of the expected impacts in the long term.

In order to achieve a community and social-ecological resilience, positive social transformations are required at different levels. These transformations will occur as long as different actors from different sectors of society adopt pro-environmental and pro-climate behaviors, and that these are maintained in the long term.

It is expected that the aforementioned medium - term impacts in relation to knowledge, attitudes, and capacities, will enable the adoption of the desired behaviors. However, the expected impacts in the long term will be evidenced with greater force at the social - community level. Being this the ultimate goal that will allow the mobilization of the society from Galapagos to achieve the transformational and systemic changes that are needed in order to establish and maintain a Galapagos system that is, in the long term, self - sufficient and sustainable.

The HAPA model and evidence in this regard, indicate that behavioral changes should be complemented with strategies in favor of sustaining these behaviors (Goldberg et al., 2020). Therefore, in this context, the maintenance of these behavioral changes will depend, to a large extent, on the expected impacts as a result of the efforts to influence upon public policies and upon civil society. This will allow us to institutionalize, at different levels, the processes of education (both formal and non-formal), communication and correlation with the community towards climate action in the Galapagos, and leave local capacities installed with the objective of upholding them in the long term.

These expected impacts are even more relevant in the context of climate change and post COVID-19, where the scenarios will be even more changeable and unknown and Galapagos community vulnerability will be at stake. Therefore, these ECM processes will have to hold strategic and innovative approaches, tactics, and tools to promote a greater capacity for adaptation, reduction of vulnerabilities, and resilience to overcome adversity.

4.2 Technologies/innovation to be promoted through the module.

This module proposes the use of innovative approaches, methodologies and tools for education (formal and non-formal), communication and community mobilization processes.

Innovation for evaluating progress and impacts resulting from education, communication and mobilization programs:

For evaluating the climate literacy of the local students and empowerment of the community towards climate action we will use the EPI's evaluation system which was developed in 2013 inspired by the North American Association for Environmental Education (NAAEE) framework for environmental literacy and reviewed in 2018 through a partnership with researchers from the Cornell University.

This evaluation system was designed to measure the changes of the environmental literacy in the participants as the result of the EPI's education programs. There are many definitions of environmental literacy. EPI uses that of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the North American Association for Environmental Education (NAAEE). These organizations define an environmentally literate person as someone who demonstrates the knowledge, dispositions, competencies and behavior intentions to act, individually or collectively, to address environmental challenges.

The evaluation system will help us to measure the expected educational outcomes for knowledge, dispositions, competencies and expected behavior intentions about climate change that we would like to see happening as the result of the actions proposed.

There are different models to evaluate an environmental education program. Evaluation represents the systematic assessment of the operation and/or the outcomes of a program or policy, compared to a set of explicit or implicit standards, as a means of contributing to the improvement of the program or policy.”

Based on the scope of the actions proposed, we will evaluate three essential aspects: participant climate literacy, experience quality, and conservation results.

- Climate literacy assessment: this part of the evaluation implies answering a research question: “Do our students achieve greater knowledge, dispositions, competencies and behavior to actively engage, individually or as a group, in addressing climate challenges?” Using three questionnaires (pre, post, and post-post assessments) we evaluate before, after, and 6 months after each course/experience to see if there are changes. A scale called “climate literacy index” allows us to compare how climate literacy changed before and after course/experience as a result of the learning that will be happening on our activities/actions proposed.
- Experience quality assessment: Through a short survey, we collect information about activity/program components that are part of the experience. Some of these components include the perceived quality of the activities like: research, lodging, meals, instruction, partner and vendor services, logistics, and other items.
- Science and Conservation outcomes: These are resulting that participants generate on the activity/program through direct participation in scientific research, mitigation and adaptation activities, and/or community outreach projects.

The combination of these three assessments will allow us a complete evaluation of how the experience contributes to reaching our goal. All the data produced is collected,

analyzed, and reported through our data analysis tool. In addition, experience impact summaries will be created to summarize this information in a visual product that will allow us to share it internally and externally.

Innovation in communication, outreach and mobilization processes and activities:

To meet the objectives related to strengthening the knowledge and engagement of the local community towards climate action, the strategies, processes, and activities in this module integrate innovative communication frameworks based on behavioral sciences and environmental psychology, hence offering an innovative, compelling and effective approach.

In Galapagos, communication strategies, interventions and campaigns are likely to be designed by prevailing assumptions about the target audiences, focused mainly on perceptions, knowledge, attitudes, and holding an important limitation regarding the integration of knowledge related to human and social behavior (Rare and BIT 2019). Furthermore, information and evidence regarding these behavioral aspects in relation to climate change on the islands are almost non-existent. Thus, the integration of these approaches and methods is especially relevant for the context of the people of Galapagos, as well as to be able to achieve the expected impacts, since as evidence shows that communication actions based solely on information and awareness-raising do not lead to behavioral changes (Rare and BIT 2019).

Climate change communications have evolved over the last decade, now becoming a comprehensive approach based on social sciences, which takes into consideration the individual and contextual factors, both conscious and unconscious, that have an influence upon human and social behaviors. Thus, climate change communication within this module will integrate innovative frameworks, methodologies, and tools such as Social Change and Behavior Communication (SBCC), based on research and behavioral theories targeted towards the promotion of changes at both the individual and community levels. This framework will in turn integrate innovative and highly effective communication approaches, strategies, and tools, which have already been mentioned above, such as

communication for behavioral change, community mobilization, and communications for advocacy, social marketing, and storytelling, among others (USAID, 2017).

For the integration of this innovative approach within this module, we will count with the technical advice of our partner in the project Behavioral Insights Team (BIT). They are experts in behavioral sciences, both in the development of diagnoses, as well as in the effective application of behavioral insights and the evaluation of behaviorally - informed interventions. Communication strategies based on behavior provide an effective alternative as well as a new perspective to reconsider the traditional approaches used, especially within the field of environmental conservation and sustainability. Human - driven climate change is a behavioral challenge and therefore requires behaviorally - informed solutions (Rare and BIT 2019).

4.3 Social benefits

WWF recognizes and integrates the social dimension as the fundamental basis to strengthen conservation and sustainable development results, and to ensure a sustainable future. Actions to conserve nature and human development are closely related to rights of people to achieve their livelihoods, enjoy healthy and productive environments, and to live with dignity. The proposed module integrates a human rights approach as a fundamental pillar to create equitable, effective, and sustainable solutions to address the current and future socio-environmental challenges that climate change poses for Galapagos local community.

Education is a central pillar of this module, understood by the United Nations as a tool that in addition to improving quality of life, can provide the local population with the necessary tools to develop innovative solutions to their problems and to reduce inequalities. Through education and training under equitable conditions, women and other vulnerable actors can improve their capabilities to develop alternative livelihoods to eventually escape the vicious cycle of poverty, as well as to promote the conditions so that local communities, especially the most vulnerable actors, can fully exercise their

rights and strengthen their involvement in decision making processes regarding natural resources.

The educational processes based on theoretical considerations that integrate principles of popular education, humanistic education, the pedagogy of the earth, among others, favors that the new generations have the capacities, skills, and tools to reflect and make decisions that contribute to the sustainability of their territories in an active and conscious manner.

Thus, through this Program, we seek to promote education processes to strengthen the integral development of boys and girls (affective, cognitive, and social) so that they are better prepared in the future to face the impacts of climate change. This strengthening includes the development of capacities and skills for reflection, critical thinking, and autonomy in boys, girls, and young people, which will allow them to develop a critical awareness about the management of the natural resources of Galapagos and have the tools to actively participate in the decision - making processes about the territory in the future.

The lack of priority given to comprehension in learning processes limits that capacity of children to develop critical thinking skills and abilities that would allow them to adapt to their environment, solve problems, and make decisions. These are processes that are necessary for comprehensive development, something that is critical in the early stages of learning.

This output has both formal and non-formal training strategies for trainers. By training adults with the capacities and tools to facilitate meaningful learning in girls, young people, and other adults, we are installing local capacities to facilitate processes of social transformation. In this way, we guarantee that the processes of decision - making and the collective construction of solutions to climate change, integrate as transversal axes, the full and effective social participation of all actors, favoring in this manner the bases for good governance and management of the natural resources of the Galapagos.

Accordingly, this output will integrate aspects associated with sustainability and human rights, gender equality, and cultural diversity, through the Education for Sustainable Development approach. This will be transversally integrated in all actions proposed and expected outcomes. It is worth mentioning that this approach promotes education adjusted to cultural and territorial particularities, while affirming identities, reducing inequality, and recovering cultural diversity.

Contextualized education seeks to promote in children, young people, and adults the connection with their territory, with the natural and cultural surrounding environment, and in this manner, raise an awareness of the importance of conserving and making sustainable use of natural resources, especially within a climate change context.

Experiential and technical education involves the processes in which vocational skills are imparted so that the graduates use the acquired skills in an appropriate manner that would enable them to improve their standards of living through increased incomes, productivity, self-employment and a generally improved quality of lifestyle. As far as higher and technical education is concerned, this constitutes a key element in the fight to overcome poverty, the inequality of opportunities, and to promote social mobility. Social inclusion gaps are directly connected to the gaps between what schools are teaching, and what the current labor markets require, which translates into low level professional skills.

Improving opportunities for women and girls, as well as for local communities and indigenous peoples to gain access to all levels of education is fundamental. The United Nations establishes the following target in the Sustainable Development Goals agenda: “by 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples, and children in vulnerable situations”.

The output proposes to assess the obstacles and opportunities that women, girls, youth, adults, and other vulnerable groups face, in order to define the most appropriate strategies to improve these disparities and promote access to a quality education.

5. REFERENCES

- Armstrong, A., Krasny, M., Schuldt, J. (2018) Communicating Climate Change. Cornell Series in Environmental Education. P. 144.
- Bamberg, S., Rees, J. Seebaur, S. (2015). Collective Climate action: Determinants of participation intention in community based pro-environmental initiatives. *Journal of Environmental Psychology*. 43:155-165. DOI: 10.1016/j.jenvp.2015.06.006
- Bustamante Ponce, Teodoro. 2010. Economic Dynamics and the Workforce of Galapagos. P. 150-155, Galapagos Report 2009-2010, Facultad Latinoamericana de Ciencias Sociales-FLACSO Ecuador.
- Consejo de Gobierno del Régimen Especial de Galápagos. Plan de Desarrollo Sustentable y Ordenamiento Territorial del Régimen Especial de Galápagos. Plan Galápagos. 2016. Puerto Baquerizo Moreno, Galápagos, Ecuador.
- Corner, A., Roberts, O., Chiari, S., Voller, S., Mayrhuber, E., Mandl, S., Monson K. (2015) How do young people engage with climate change? The role of knowledge, values, message framing, and trusted communicators. *Wiley Periodicals, Inc.*
DOI: <https://doi.org/10.1002/wcc.353>
- Education for Sustainable Development Goals - Learning Objectives. Publicado en 2017 por la Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura.
- Engajamundo, Red Regional de Cambio Climático y Toma de Decisiones, Programa UNITWIN de la UNESCO. (2020). *Acción Climática Local: una guía para jóvenes de América Latina*. https://cdkn.org/wp-content/uploads/2020/12/Accion-Climatica-Local_GUIA_ESPANOL.pdf
- Engajamundo, Red Regional de Cambio Climático y Toma de Decisiones (2020). *Ciclo Hací Click: Fortaleciendo Capacidades de Jóvenes de LAC*.
<https://www.cambioclimaticoydecisiones.org/webinar-jovenes/>
- FLACSO Ecuador (2019). *Liderazgos jóvenes y acción climática: experiencias de vinculación con la sociedad Especialización en Liderazgo, Cambio Climático y Ciudades*.
https://flacso.edu.ec/cambioclimatico/wp-content/uploads/2019/11/ELCCC_liderazgos_web-3.pdf

- Goldberg, M., Gustafson, A., Van Der Linden, S. (2020) Leveraging Social Science to Generate Lasting Engagement with Climate Change Solutions. *One Earth*. <https://doi.org/10.1016/j.oneear.2020.08.011>
- Hui, E. K. P., Tsang, S. K. M. (2012) Self-Determination as a Psychological and Positive Youth Development Construct. *The Scientific World Journal*. doi:10.1100/2012/759358
- Kwauk, C., Braga, A., (2017) *Translating competencies to empowered action*. Center for Universal Education at Brookings. <https://www.brookings.edu/wp-content/uploads/2017/11/translating-competencies-empowered-action.pdf>
- Make Sense (2020). *Sense Camp Latam 2020*. <https://sensecamplatam.org>
- Ministry of the Environment and Water (2020) Pacto por la educación para el desarrollo sostenible alcanzará a más de 4 millones de estudiantes. <https://www.ambiente.gob.ec/pacto-por-la-educacion-para-el-desarrollo-sostenible-alcanzara-a-mas-de-4-millones-de-estudiantes/>
- Ministry of the Environment and Water (2020) Third National Communication of Ecuador on Climate Change.
- Organization for Economic Co-operation and Development. (2018). *Preparing our youth for an inclusive and sustainable world: The OECD PISA Global Competence Framework*. <https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf>
- Otto, I.M., Donges, J.F., Cremades, R., Bhowmik, A., Hewitt, R.J. et.al. 2020. Social tipping dynamics for stabilizing Earth's climate by 2050. *Proceedings of the National Academy of Sciences*, Jan 2020, 201900577; DOI: 10.1073/pnas.1900577117
- Poirier, S. (2019) Children's educational TV falls short on climate change. *Yale Climate Connections*. <https://yaleclimateconnections.org/2019/01/kids-educational-tv-falls-short-on-climate-change/>
- Pruneau, Diane, Mélanie Demers and Abdellatif Khattabi. 2008. "Educating and Communicating about Climate Change: Challenges and Possibilities." [Éduquer et communiquer en matière de changements climatiques: Défis et possibilités.] *Vertigo*, la Revue des 294 N. Naoufal Downloaded by [Université du Québec à Montréal] at 08:15 01 October 2014 *Sciences de l'Environnement [Vertigo Journal of Environmental Sciences]* 8 (2). <http://www.erudit.org/revue/vertigo/2008/v8/n2/index.html>.
- Rare and The Behavioural Insights Team. (2019). *Behavior Change For Nature: A Behavioral Science Toolkit for Practitioners*. Arlington, VA: Rare

- Román D, MC Cortez, N Cabot and S Huss-Lederman. 2015. Education for sustainability in Galapagos: A public-private partnership for strengthening education in the Islands. Pp. 60-66. In: Galapagos Report 2013-2014. GNPD, GCREG, CDF and GC. Puerto Ayora, Galapagos, Ecuador.
- Sampedro C, Pizzitutti F, Quiroga D, Walsh SJ, Mena CF. 2018. Food supply system dynamics in the Galapagos Islands: agriculture, livestock and imports. Renewable Agriculture and Food Systems 1–15. <https://doi.org/10.1017/S1742170518000534>
- Sharma R (2017) Experiential learning and climate change education: effect of predict-observe-explain strategy on pre-service teachers' understanding of sea level rise. *Dir J Educ Stud* 13(1):93–112
- Tomaselli, Andres. 2018, “La educación técnica en el Ecuador”, serie Políticas Sociales, No. 227 (LC/TS.2018/1), Santiago de Chile, Comisión Económica para América Latina y el Caribe (CEPAL), enero.
- U-Report Ecuador (2019). *Las voces de la juventud frente al cambio climático*. <https://ecuador.ureport.in/opinion/1296/>
- UN CC: Learn. (2015). *Youth Climate Dialogues*. The ONE UN Climate Change Learning Partnership. <https://www.uncclearn.org/global-projects/youth-climate-dialogue/>
- UNESCO (2019) Country progress on Climate Change Education, Training and Public Awareness: An analysis of country submissions under the United Nations Framework Convention on Climate Change. P.16
- UNICEF (2019). *Voices of Youth*. <https://www.voicesofyouth.org/>
- UNICEF, PNUD, CONQUITO, Tandari (2020) Laboratorio de Sueños. <https://laboratoriodesuenos.com/>
- Universidad Central del Ecuador Estudio de demanda de Carreras de Tercer Nivel en Galapagos, Agosto 2017. No se ha publicado todavía.
- USAID (2013) Social and Behavior Change Communication (SBCC) Training for Information, Education, and Communication (IEC) Officers. P.454.

Viernes por el Futuro Ecuador (2019) *Fridaysforfuture_Ecuador*.
https://www.instagram.com/fridaysforfuture_ecuador/

We Adapt (2007) Community Based Adaptation (CBA). <https://www.weadapt.org/knowledge-base/community-based-adaptation>

WWF-Colombia (2020) Generación 10. <https://generacion10>