Request Submission Form for CTCN Technical Assistance (version 1.0 - January 2014)

APPLICANT/CONTACT:

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COUNTRY: Chile

TITLE: Design of Biodiversity Monitoring Network in the context of Climate Change

GEOGRAPHICAL FOCUS:

☐ *Community-based* ☐ *Sub-national* *X National* ☐ *Multi-country*

{If sub-national or multi-country level, please indicate here the concerned areas (provinces, states, countries, regions, etc.)

SECTOR/THEME

Mitigation:	☐ *Energy*	☐ *Forestry*
	☐ *Transport*	☐ *Water Resources*
	☐ *Industry*	*X Coastal Zones/Oceans*
	☐ *Agriculture*	*X Terrestrial Ecosystems*
	☐ *Forestry*	☐ *Human Health*
	☐ *Waste*	☐ *Infrastructure/Human Settlement*
	☐ *Cross-sectoral*	☐ *Tourism*
Adaptation:	X *Early Warning/*	☐ *Businesses*
	Disaster Reduction	☐ *Education*
	☐ *Agriculture/Fisheries*	*X Cross-sectoral*
		X Biodiversity

OTHER RELEVANT SECTORS:

Biodiversity and Related Sectors

Because of the its latitudinal extent in the southwestern margin of South America, crossing several biogeographic regions, Chile can function as a natural laboratory for biodiversity monitoring in the context of climate change. Several characteristics of the territory and its institutions reinforce this statement: i) Chile is a biogeographic island where ecosystems are enclosed by the Andes Mountains, the Atacama desert, the Pacific ocean and the Antarctic continent. ii) The country has more than 4000 km in length of marine, terrestrial and freshwater ecosystems, and a reduced east-west distance. Its topography goes from near 7000 meters in the Andes to sea level in the Pacific coast, providing broad climatic and ecological gradients, including terrestrial environments as well as aquatic continental, coastal, marine and island settings. iii) Chile has an extensive protected area network including approximately 20% of its continental surface, distributed throughout its latitudinal range. The country has also advanced in the protection of its costal and marine environments, including the creation of several new protected areas, iv) Chile has a strong set of public organizations and academic centers that accumulate decades of frontline research and information on local and regional biodiversity.

Therefore, the periodical assessment of ecosystem integrity and biodiversity, including the potential impacts of future climate scenarios as well as an early warning system is highly important for the conservation, sustainable use and protection of the national heritage, especially in regions with fragile terrestrial, costal and marine ecosystems. In fact, due to the ongoing anthropogenic and cross-sectoral

pressures and current threats on ecosystems and species, its vulnerability to climate change may even be higher than in undisturbed systems.

PROBLEM STATEMENT (up to half a page)

Chile's current and future economy relies strongly on its biodiversity to offer access to a wealth of terrestrial and marine natural resources. Biodiversity is a transversal component that relates directly or indirectly with most productive and sectorial activities of the country. Among these relevant activities we can identify fishing, agriculture, forestry, farming and livestock development, mining, transportation, urban development, waste management, industry, energy generation, health, water supply and risk management among many others. Some activities are based on the extraction of valuable species with the end use of commercializing them as food products for national and international markets (agriculture, fishing, forestry), others are dependent on so called ecosystem services such as, for example, water production for industrial processes (mining, energy, industry), while others sustain themselves in scenic beauty and richness (sightseeing, tourism, hobbies in the wilderness, sports and recreation). Sectorial activities generally consist of development projects and interventions that frequently bring pressure or threat to wilderness areas or landscapes with determined biodiversity characteristics. These pressures and threats can be aggravated considering the effects of future climatic change on ecosystems and species. In this regard, being equipped with a rigorously planned biodiversity monitoring network that can allow for detecting changes in biodiversity and its relationship with climate is a fundamental component of structural action and policy decisions in Chile's adaptation to climate change.

The Chilean population depends on biodiversity in multiple ways, at national, regional and local scales; therefore a dynamic and periodic assessment of the state of biodiversity is essential to make informed decisions, as well as to keep the necessary safeguards for the sustainable use and conservation of these biological assets. This information is not only useful for environmental public institutions and agencies, but also for a diverse set of actors that are involved in developing projects and interventions in line with evolving environmental and social standards.

DEVELOPMENT OF THE REQUEST (up to half a page)

The Clean Production Center, National Designated Entity for the CTCN started conversations with government agencies, in particular the Climate Change Office, part of the Ministry of Environment, UNFCC focal point during early September 2013 for development of a pilot proposal for the CTCN. Given the present development of the National Adaptation Plan, and specifically the development of the Adaptation Plan on Climate Change for Biodiversity that are and have been developed with a series of

public and technical steps required for the creation of these plans (Technical Studies, Public Consultation, Regional Workshops), stakeholder engagement has been fulfilled. The monitoring biodiversity network is considered the cornerstone of the Adaptation Plan on Climate Change for Biodiversity, hence the priority given as Chile's first request to the CTCN.

This request was initially developed with an objective of being part of CTCN pilot projects during September 2013. Because of several reasons it was decided that the best action was to wait for the full operation of the CTCN in early 2014 and not as a pilot project. It has now been completed, narrowed down, and with all the necessary approvals for submission.

The request for the CTCN has been approved in a meeting on February 13th by the by the UNFCCC Chilean delegation table.

ASSISTANCE REQUESTED (up to one page)

The main purpose of the technical assistance requested from the CTCN is **the design of a Biodiversity Monitoring Network in the context of Climate Change.** This initiative is of utmost importance to proper decision-making and climate change adaptation policy. The first stage of this initiative should consist in the design of a conceptually and practically robust monitoring strategy. The second stage will consist of establishing the national network, with the third stage being its implementation of infrastructure and personnel needs. **The present proposal presented for the CTCN aims at completing the first step of the three stages indicated.**

For achieving the purpose three objectives have been identified:

1- To diagnose the needs, as well as to propose the conceptual design and basic architecture (mockup) of a coherent and multiscale network for monitoring biodiversity and ecosystem integrity in the context of climate change adaptation, we must work on the following specific subjects, among others:

- Identification of which ecosystems and species must be monitored in terrestrial as well as aquatic continental environments, coastal and marine environments, at national, regional and local scales.
- Identification of the main biotic indicators and climatic variables and warning signals for monitoring.
- Development of comparable methodological tools for, monitoring ecosystems and biodiversity, reporting and management information, considering high standards of quality and efficiency.

- Development of an easily accessible database and information platform, and its related Geographic Information System (GIS) for the communication and management of information.
- Development of effective and rapid survey methods for monitoring land use change effects on biodiversity.

2- To identify institutional partners and design the arrangement and necessary inter-institutional alliances (at national and international levels), logistic, and operational requirements, with a corresponding budget for gradual implementation of the national monitoring network.

3- To generate the standards and protocols for network inclusion and rapid assessment of related initiatives that might be incorporated into the network in response to knowledge gaps that must be filled.

Outcomes expected and their impact:

Outcome	***Impact***
Development of the architecture and conceptual design of a national multi scale and multi institutional monitoring network for biodiversity and ecosystem integrity and its response to climate change.	*Very High. An integral conceptual and practical design does not presently exist for biodiversity monitoring.*
Identification of existing knowledge gaps with respect to biodiversity and ecosystem conditions and of existing national activities in the field of ecosystem/biodiversity monitoring and its possible incorporation in the network.	*Very High. Strategic information at all scales must be considered so that decision making has high quality standards and appropriate thematic and geographic scope. This will mean trustworthy reports from the network.*
Identification of standards and protocols for the monitoring of biological and environmental variables, climate scenarios, the networks information exchange and data management.	*Very High. Exchange and transfer protocols is the basic component for the stepwise implementation of such a monitoring network which will provide the highly necessary information tools for biodiversity and ecosystem management on a country scale.*
Identification of necessary formal institutional arrangements and alliances as well as logistic and operational requirements including the corresponding budget for a gradual network implementation.	*Very high. The network will need to set up a governance framework in order to deploy and have a long-term financial sustainability to operate.*

ALIGNMENT WITH NATIONAL PRIORITIES (up to half a page)

Systematic and periodic monitoring of biodiversity and ecosystems at all scales is absolutely necessary for implementing adaptation measures established by public policy. This initiative is a policy priority that has been selected for consideration because of its high relevance and critical nature in the context of the Adaptation Plan on Climate Change for Biodiversity, coordinated by the Chilean Ministry of the Environment (Natural Resource Division, Waste Division, Risk Evaluation Division and The Climate

Change Office). This plan is part of the National Adaptation Plan on Climate Change and of the National Biodiversity Strategy. The initiative is fully consistent with an integral approach for adaptation action. First of all it involves the necessary "capacity building" to respond to the challenges of monitoring climate change effects over biodiversity considering nationally generated infrastructure and know-how this task. Secondly, the initiative is an "innovation/adaptation" action because it represents an entirely new focus in the efforts for protecting, using and long-term monitoring of biodiversity in the country. Classic monitoring has being characterized by individual efforts, based on short-term projects, with limited time and scopes. Therefore, there is a lack of continuous, systematic and periodic efforts that can provide the country with dynamic information about trends in biodiversity condition in both protected areas and anthropogenic landscapes. The initiative can help the country to face those gaps and, at the same time, strengthen procedural, institutional, methodological, technological and other aspects that must be covered to deploy a monitoring network. This action also relates to the "technology supplier identification", understanding that a monitoring network for biodiversity requires the most cost and time-effective methodological and technological design to gather, store, process, analyze, synthetize, connect, transmit and share data. The network proposed is composed by different nodes that must communicate to different levels and are centrally coordinated. In fact, up to now, prominent monitoring efforts are neither sufficiently informative nor used in environmental policy. A state-of-the-art technological design can contribute to breaking this trend. The initiative proposed is the first stage of a long term challenge. This crucial stage must allow the network to operate fluently and accomplish its objectives in the long run. During this stage the methodologies will be conceptualized for implementation in later stages. The demonstrative and capacity-building nature of the network will be verified properly during the implementation stage.

PAST AND ONGOING EFFORTS (up to half a page)

The creation of a biodiversity health monitoring network in the context of climate change adaptation is clearly identified as a major need for the environmental institutions of the country. In this regard, previous assessments under the direction of the Ministry of Environment (MMA for its Spanish acronym) have revealed the appropriateness of counting with this network as a significant objective for public policy in relation to biodiversity and climate change adaptation (MMA-IEB, 2010). This need has been picked up in the Adaptation Plan on Climate Change for Biodiversity, which has been completed in January 2014. This Plan corresponds to one of nine sectorial plans that the MMA has committed to develop. It is worth highlighting that in Chile there has been progress or early stage development of diverse initiatives in regard to species and ecosystem monitoring. Among them we can mention: i) A study of terrestrial biodiversity vulnerability in the Mediterranean ecoregion under the context of climate change adaptation (MMA-IEB, 2010); ii) A study called Climate Change Adaptation Plan for Biodiversity executed by AGRIMED, Center

of the University of Chile for the Ministry of Environment (MMA-AGRIMED, 2013), which provides guidelines about climatic stress on terrestrial ecosystems under projected climate change scenarios for 2030 and 2050; iii) An initiative related to monitoring biodiversity of protected areas, particularly in ecological restoration projects started in collaboration with Parks Canada and The Chilean National Forestry Corporation (CONAF for its Spanish acronym) in the Nevado de Tres Cruces National Park, El Yali National Reserve, and Torres del Paine National Park; iv) Wetland monitoring is an additional concern where environmental policies have promoted important efforts; v) A project for the classification of terrestrial ecosystems according to their current conservation condition (IEB-MMA, 2013); and vi) universities and academic centers have devoted significant efforts and resources to studying biodiversity (IEB, Austral University, CEAZA, University of Chile, EULA Center), under different scopes and perspectives.

These important initiatives notwithstanding, there is a lack of communication and planning in a coherent and integral common effort with the aim of providing a periodical and comprehensive assessment of the changes in biodiversity in the country and its main drivers. We expect therefore that a well-conceived and coordinated monitoring network will contribute timely, periodic, trustworthy and effective answers regarding the condition and health of the countries' biodiversity heritage, in all its different levels and spatial scales, under global climate change scenarios.

EXPECTED BENEFITS (up to half a page)

It is expected that during the future implementation stage, the Biodiversity Monitoring Network will be the main source of publicly accessible information to assess the condition of biodiversity under a rapidly changing climate and social environment and to support environmental policy making and decision. The private sector will also take advantage of the network reports and orientations in terms of improving the sustainability of their management practices and decisions. Given that environmental policy is directed to the protection of the country's natural heritage, the combination of all socio-economic sectors that make up this country - more than 16 million people – should be potentially beneficiaries of the existence and operation of the network (e.g., for planning land use and management of resources). This initial stage (Designing Stage) approached in this request, will provide the solid conceptual and organizational basis for the deployment of the network, allowing for the confluence of a series of critical actors (from public organizations, academic centers, private companies, and society) to mount and operate this network. The number of initially identified actors will be broadened in the implementation stage, as a consequence of the natural functioning and coordination of the network.

EXPECTED TIME FRAME

Duration: One Year (12 months)

	Meses											
Outcome	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Development of the architecture and conceptual design of a national multi scale and multi institutional monitoring network for biodiversity and ecosystem integrity and its response to climate change.	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
Identification of existing knowledge gaps with respect to biodiversity and ecosystem conditions and of existing national activities in the field of ecosystem/biodiversity monitoring and its possible incorporation in the network.		**x**	**x**	**x**	**x**	**x**	**x**					
Identification of standards and protocols for the monitoring of biological and environmental variables, climate scenarios, the networks information exchange and data management.					**x**	**x**	**x**	**x**	**x**	**x**	**x**	
Identification of necessary formal institutional arrangements and alliances as well as logistic and operational requirements including the corresponding budget for a gradual network implementation.					**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**

KEY STAKEHOLDERS

Stakeholder	**Role in the response**
Ministry of the Environment	Commanding. Leads the initiative, prepares the proposal. Beneficiary and partner
Instituto de Ecología y Biodiversidad (IEB)[1]	Suggested Service Provider
Public institutions, to be defined	Partner
Research institutions, to be defined	Partner
NGOs, to be defined	Partner

[1] The Institute of Ecology and Biodiversity (IEB, see www.ieb-chile.cl) is a Centre of Excellence in Ecological and Biodiversity Research that assembles scientists of several Chilean universities. At the moment IEB is developing a long-term ecosystem monitoring network in Chile centered at three main sites, coordinated with a worldwide network.

MONITORING AND EVALUATION

☐ By signing this request, I affirm that processes are in place in the country to monitor and evaluate the assistance provided by the CTCN. I understand that these processes will be explicitly identified in the Response Plan in collaboration with the CTC, and that they will be used in the country to monitor the implementation of the CTCN assistance.

☐ I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

DATE AND SIGNATURE

NDE:	**Consejo Nacional de Producción Limpia**	*Date:*	**19/02/2014**
Responsible Person:	**James A. Robinson**	*Signature:*	

República de Chile
Consejo Nacional de Producción Limpia