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MULTILATERAL INVESTMENT FUND

CHILE

REDDCHAIN PROJECT (RCP)

CH-T1217

DONORS MEMORANDUM

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PROJECT SUMMARY

CHILE

REDDCHAIN PROJECT (RCP PROJECT)

(CH-T1217)

REDDChain Project (RCP) is a pioneering land-use management initiative with the objective of improving the capacity to measure, report and verify land-use related climate change mitigation actions by applying cutting-edge technological innovations from the fields of Artificial intelligence (AI), Internet of Things (IoT) and secure ledgers to climate finance instruments or environmental markets, and respective state-of-the-art Measurement Reporting and Verification (MRV) systems. The primary development challenge RCP strives to address is insufficient climate mitigation action in the land-use domain, starting with forests.

RCP's platform integrates and transforms diverse sources of satellite-, drone-, sensor- and stakeholder-captured information, bringing high-veracity monitoring and forecasting to stakeholder-friendly, framework-compliant, and standardized processes.

The project team will work with Corporación Nacional Forestal (CONAF) and other key partners to undertake novel research and development activities that lead to the creation of a pilot for a land-use monitoring system, driven by AI trained on data from diverse sources, including satellite and ground-sourced data. Applied data sources include the government's own land-use-related databases, several of which have already been shared by CONAF with the Executing Agency for initial testing. The pilot aims to automatically monitor land-use change, offering advantages in terms of efficiency and accuracy and helping CONAF staff prioritize their field visits and enforcement interventions.

In parallel to the first pilot in Chile, RCP will also conduct four feasibility studies/tests to assess the potential for integrating (i) forest degradation detection/forecasting, (ii) tree species composition, (iii) biodiversity indicators evaluation and (iv) wildfire detection/forecasting, using machine learning in conjunction with satellite-, mobile devices, sensor- and/or drone-sourced data. These will in turn inform the design of extensions to the pilot as it scales, as will the outputs of a new assessment tool for mapping requirements across relevant markets, policies and investors.

RCP will also seek to disseminate its findings in peer-reviewed journal articles and web-published reports, open source its code (and as much of the data as is feasible, with owners' permission) and present a showcase of the project at COP 25 in Chile in December 2019.

To prove an approach that holds the potential to be scaled up to cover the entire planet, RCP will explore new and cutting-edge data and machine learning techniques, from the research lab to real-world application. The project will demonstrate how the system could be extended to trigger results-based payments related to climate change mitigation, biodiversity preservation and/or other environmental services, including innovative unit-

based (fractionalized) investment mechanisms (e.g. by virtue of secure ledger technologies).

RCP will also explore existing markets, standards and certification schemes linked to environmental markets at international and national level (e.g. REDD+, CORSIA, Article 6 of the Paris Agreement, domestic carbon offset schemes and biodiversity compensation markets) in order to ensure alignment and compatibility of the RCP Platform with such markets and financial instruments to enable results-based payments.

Finally, the project features a dedicated component aiming at the identification of additional pilot projects beyond the first application with CONAF in Chile that would leverage the RCP platform to catalyze financial flows towards climate change mitigation, biodiversity and/or other environmental services/commodities. This will include extensions to the technology platform, further field tests of prototype measurement approaches, the development of additional project concepts and respective project or transaction-level feasibility studies designed to elicit expressions of interest from governments and investors, or buyers and sellers of environmental commodities such as carbon credits or biodiversity certificates.

ANNEXES

APPENDICES

AVAILABLE IN THE TECHNICAL DOCUMENTS SECTION OF IDB LAB PROJECT INFORMATION SYSTEM

ACRONYMS AND ABBREVIATIONS

AI	Artificial Intelligence
C21	Cleantech 21
Climate-KIC	Climate Knowledge and Innovation Community
CONAF	Chilean National Forestry Corporation (known as Corporación Nacional Forestal in Spanish)
COP	Conference of the Parties of the UNNFCCC
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
DLT	Distributed Ledger Technology
DNA	Diagnostic of Executing Agency Needs
EIT	European Institute of Technology and Innovation
ETH	Swiss Federal Institute of Technology
ETS	Emissions Trading Scheme
FCPF	Forest Carbon Partnership Facility
GHG	Greenhouse Gas
GS	Gold Standard
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
ICAP	International Carbon Action Partnership
IDB	Inter-American Development Bank
IDB Invest	Inter-American Investment Corporation
IoT	Internet of Things
IP	Intellectual Property
KPI	Key Performance Indicator
IDB Lab	Multilateral Investment Fund
MIT	Massachusetts Institute of Technology
ML	Machine Learning
MRV	Measurement, Reporting & Verification
NDC	Nationally Determined Contribution
PES	Payment for Environmental Services
PLG	Project Leadership Group
PM	Project Manager
PMR	Partnership for Market Readiness
RCP	REDDChain Project
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SC	Steering Committee
UNFCCC	United Nations Framework Convention on Climate Change
USD	US Dollars

PROJECT INFORMATION

CHILE
REDD-CHAIN PROJECT (RCP)
(PROJECT NUMBER)

Country and Geographic Location:	Chile, with pilot project in the region of Valdivia		
Executing Agency:	South Pole Carbon Asset Management Ltd., Switzerland (South Pole)		
Focus Area:	Climate-Smart Agriculture, Natural Capital		
Coordination with Other Donors/Bank Operations:	The project is a joint effort of the IDB Lab and the IDB Natural Capital Lab. It has counterpart funding from EIT Climate-KIC, Europe's largest public-private innovation partnership tackling climate change. RCP will also benefit from EIT Climate-KIC's network, technical support and synergies with other relevant projects supported by EIT Climate-KIC.		
Project Beneficiaries:	The Chilean National Forestry Corporation (CONAF), landholders who undertake restoration or conservation activities, that could benefit from environmental markets. Investors active in results-based finance schemes with a focus on sustainable land-use.		
Financing:	Technical Cooperation:	USD 825,000	37%
	Equity:	USD 000,000	
	Loan:	USD 000,000	
	Other (explain), Grant:		
	TOTAL IDB Lab FUNDING:	USD 825,000	37%
	Counterpart:	USD 1,380,450	63%
	Co-financing (if available; include a separate line for IDB Co-financing if applicable):		00%
	TOTAL PROJECT BUDGET:	USD 2,205,450	100%
Execution and Disbursement Period:	32 months of execution and 36 months of disbursement.		
Special Contractual Conditions:	Special conditions precedent to first disbursement will be: (i) proof of approval of Climate KIC or alternative funding, as explained in 4.1; (ii) Signature of agreements with the parties indicated in 5.6/ 5.7/ 5.8/ 5.9/ 5.10/ 5.11.		
Environmental and Social Impact Review	This operation was screened and classified as required by the IDB's safeguard policy (OP-703) on May 17, 2019. Given the limited impacts and risks, the proposed category for the project is C.		
Unit responsible for disbursements	CSC/CCH		

I. The Problem

A. Problem Description

1.1 **Context**. Climate change is arguably humanity's primary challenge, demanding urgent, decisive action in line with the Paris Agreement. Land use is a key component, accounting for approximately 25% of total greenhouse gas emissions (GHG) worldwide. Land use includes critical issues like deforestation and forest degradation through agriculture.

The domain is particularly challenging given that the world's growing population and rising standards of living exert an increasing pressure on food and consumer goods production, both of which may lead to conflicting objectives with climate change and biodiversity.

1.3 **The Problem.** The REDD+ program[1] (Reducing Emissions from Deforestation and Forest Degradation) is UNFCCC's scheme for the reduction of emissions through enhanced forest protection measures. Designing effective REDD+ policies and actions, assessing their GHG impact, and linking them with the corresponding payments is a resource-intensive and complex task for which there is considerable room for improvement, particularly around opportunities to maximize technology utilization and private sector involvement.

1.4 This complexity and resource intensity lead to delays in the implementation of policies, insufficient levels of transparency and, as a consequence, a lack of actionable projects for investors to support, or for existing results-based payment mechanisms to fund. Current efforts fall short of fully leveraging the processes and technology innovations available today; this ultimately contributes to countries failing to comply with national or international agreements, and failing to benefit from financial compensation mechanisms, such as REDD+, while also inhibiting the effective structuring of actionable projects that investors could be willing to finance. The net result is insufficient climate action in the land management domain (including biodiversity protection) and a collective failure to meet the climate targets.

1.5 **Importance in Chile.** Chile has committed to take action to mitigate climate change, both domestically and internationally as per the Paris Agreement[2]. The land-use sector in Chile represents the biggest source of GHG emissions, while also bearing the greatest potential for GHG emissions reduction and avoidance[3]. Chile is one of the few countries to separate the land-use sector target from other emissions in its Nationally Determined Contribution (NDC), which increases the transparency of its proposed actions in this sector[4]. Chile is also among a small group of countries with explicit NDC commitments related to sustainable land-use[5].

[1] https://redd.unfccc.int/
[2] See Chile's NDC
[3] See Chile's latest Biennial Report on Climate Change
[4] See Climate Action Tracker Initiative
[5] In its NDC, Chile proposes separate targets to address the land-use sector: a) sustainable management and recovery of 100,000 hectares of forest by 2030 with estimated emissions reductions of 0.6 MtCO2e per year

1.6 For these reasons, Chile's climate change mitigation efforts in the areas of deforestation, forest degradation, land use change, forest management and related issues are of key importance to achieve its NDC and contribute to the goals of the Paris Agreement. Without applying scalable MRV technologies—ranging from ground/remote sensing, data verification and automated analysis to financial disbursement and shared, auditable platforms—this urgent and critical task will be impeded by the problems listed above.

1.7 **Specific Challenges.** Since its formation in 2017, the RCP Team has been attending conferences and workshops, interviewing experts, reviewing the academic literature and monitoring the start-up landscape in an effort to pinpoint the specific challenges that contribute to the problem description in 1.3 above, and which are resulting in reduced flows of climate finance to Chile, and onward to local populations. In February 2019 during a kick-off workshop in Santiago, the RCP team corroborated these challenges with CONAF, as being:

- Need for more and better data on land use (increased cooperation/data sharing amongst countries/regions and investors, common access to emerging remote and non-remote sensing, etc.);

- Need for more transparency (avoiding double-counting and/or misallocation of funds, enabling traceable impacts for donors and recipients, result-based payments and benchmarking across organisations and countries all stakeholders can trust);

- Lack of automated processes (avoiding administrative overheads, cost-intensive MRV);

- Lack of data-driven intelligence (allowing for learning, leading for example to development predictions and thus prioritization regarding the allocation of funds, differentiating biodiversity- and capturing-values, verifying results from automated sensing, etc.);

- Untapped potential regarding stakeholder engagement (with measures such as implementation verification, high-quality/dynamic reporting, enabling micro-rewarding of local landowners and custodians without middlemen, etc.);

- Lack of clear mechanisms that enable the private sector to take actions (permitting large and small investors to participate in ownership of forests, creating liquid forest assets and easy-to-engage marketplaces);

- Lack of adequate incentive structures for both public and private stakeholders.

B. Beneficiaries

1.8 The National Forest Corporation or CONAF is a Chilean private corporation, dependant from Ministry of Agriculture, through which the Chilean state contributes

from 2030 and b) commitment to afforest 100,000 hectares, with mostly native species, that are estimated to capture between 0.9–1.2 MtCO2e per year from 2030.

to the development and sustainable management of the country's forest resources. CONAF is overseen and funded by the Ministry of Agriculture of Chile. CONAF will not only be the main beneficiary of the project in the short term, it will also help to co-develop the RCP Platform based on the realities and needs of sustainable land-use management within the context of a Latin American country. CONAF will work closely with the RCP Developer Team on all aspects of the pilot's design and implementation.

II. The Innovation Proposal

A. Project Description

2.1 **Objective.** The project's objective is to pilot the use of exponential technologies in the monitoring and evaluation of forest ecosystems and land use in Chile, to support reporting against national commitments and results-based investment mechanisms, improve the effectiveness of Chile's forest interventions, and to leverage potential new public and private investments through a pilot of a future unit-based investment mechanism.

2.2 The new system will help Chile comply with domestic laws[6] and international commitments based on its NDC while improving Chile's access to climate finance from existing compensation mechanisms that can facilitate private investment and channel results-based payments to landholders and rural communities on the front line of conservation and restoration activities. These compensation mechanisms include REDD+, bilateral schemes and other approaches to monetize GHG reductions or environmental services within the context of results-based finance instruments such as the World Bank's Forest Carbon Partnership Facility[7], emerging international markets such as CORSIA[8] or Article 6 of the Paris Agreement, voluntary carbon markets or future domestic carbon pricing schemes in Chile[9].

2.3 By demonstrating what is possible in Chile with CONAF, the project also seeks to catalyze wider adoption and scale-up of this technology in other countries, through a dedicated project component (Component V).

2.4 The project will address the specific challenges identified in 1.3 above by implementing a functional system of data collection, management, and analysis for forestry land-use, visualised through an easy-to-use dashboard, showing how this could drive results-based payments and/or unit-based investment models (Component I).

[6] Chile's NDC targets in the land-use sector are conditional on the approval of updates to the Native Forest Law (Decree Law 701) and a new Forest Promotion Law for example.
[7] Chile is a REDD+ Country Participant under the World Bank's Forest Carbon Partnership Facility
[8] Carbon Offsetting and Reduction Scheme for International Aviation under ICAO
[9] Chile is currently considering to deepen the use of carbon pricing instruments with the aim of facilitating the transition to a low carbon economy and achieving its NDC commitments. With support from the World Bank's Partnership for Market Readiness, Chile is assessing options around the enhancement of the existing carbon tax in Chile, the use of carbon offsets as a complementary measure to the carbon tax (like in the case of Colombia), and the possibility to transition to or supplement the carbon tax with an Emission Trading Scheme.

2.5 In addition, feasibility studies exploring new technologies and methodologies, or the adaptation of existing techniques (Component II) will be conducted to extend this system into wider areas—forest degradation, tree species composition, biodiversity evaluation and wildfires. These will in turn inform the design of extensions to the pilot as it scales (Component V), as will the outputs of a new assessment tool for mapping requirements across relevant markets, policies and investors (Component IV). All findings, scientific and methodological advancements will be published, and technology the project develops will be open-sourced (Component III).

2.6 **Innovation.** RCP will be the one of the first initiatives to apply novel data gathering, pre-processing and verification techniques, with cutting-edge machine learning algorithms within an integrated framework for MRV schemes required in the monitoring of compensation mechanisms (such as REDD+) that combines all three of the disruptive 'troika' technologies (AI, IoT, secure ledgers). In addition, RCP's operating model is unique: it is a neutral platform providing services to governments in exchange for authoritative data, and in turn licensing data with associated value-added services at different fee levels for different types of commercial projects. This differentiates RCP clearly from similar development efforts, incl. Global Forest Watch, Moja Global, and OpenForis. As a neutral platform solution, RCP can be integrated on a country-by-country/region-by region basis.

2.7 RCP will integrate different datasets (including new sources of satellite data) that have not previously been utilized in concert, paving the way to develop forecasting capabilities that previous initiatives in the forest domain have only had limited success in addressing, specifically predicting forest impact events as deforestation, degradation, carbon stocks loss/gain and biodiversity loss/gain.

2.8 A number of independent studies now recognize the very attractive potential of technologies of the fourth industrial revolution, and in particular of AI. Several of these studies also directly refer to application opportunities regarding land-use/forests[10].

2.9 **Component I**: **Pilot of a forestry land-use monitoring system (IDB Lab USD 450,885; Counterpart USD 697,535).** Component objective is to undertake research and development of a pilot web-based dashboard and mobile ground-sourcing applications, working with diverse datasets (some already shared by CONAF and other local sources, some supplied by satellite imaging providers).

2.10 As a result, CONAF staff will be able to: (i) Monitor forest-related land-use change in the target region[11]; (ii) Generate land-use reports in a standard format (to be agreed with CONAF); (iii) Compare actual forestry land-use to planned and approved forestry interventions; (iv) Prioritize site visits based on this intelligence;

[10] See page 15 of the WEF/PWC publication "Harnessing Artificial Intelligence for the Earth"
[11] Target region is initially Valdivia in central Chile, where the project has the support of CONAF staff on the ground for local gathering and verification; the project aims to expand monitoring nationally with CONAF's help, as data availability and resources permit.

(v) Gather information on the ground to improve the system's subsequent monitoring ability.

2.11 The resulting pilot will also include a non-transactional demonstration of the system's potential to trigger results-based payments, plus accompanying research outlining the remaining steps to enable such transactions, or to support unit-based (i.e. fractionalized) investment models that can distribute the financial benefits of REDD+ and other mechanisms to landowners and rural populations.

2.12 **Component II**: **Feasibility studies exploring potential future and/or phase 2 extensions to the pilot (IDB Lab USD 205,111; Counterpart USD 222,099).** Feasibility studies will allow to explore the use of satellite and/or drone/sensor/mobile app-gathered data to monitor and/or forecast four land-use events/features:

a) forest degradation (including sub-canopy clearance)
b) forest type (ie the mix of tree species in a given area)
c) biodiversity indicators evaluation
d) wildfires

2.13 The outputs of these feasibility studies feed into and inform the design of pilot extensions in Component V (in Phase 2), and also the standards and certification exploration undertaken in parallel in Component IV.

2.14 **Component III**: **Knowledge dissemination (IDB Lab USD 105,254; Counterpart USD 114,115).** With a view to promoting the project and sharing both scientific and proven operational progress as widely as possible, this component will include presenting the results of the pilot at COP25, submitting papers for peer-reviewed journals, open-sourcing the pilot's code, making datasets publicly available (where feasible and with owners' permission) and publishing articles and reports detailing the project, its methodology and results.

2.15 The project will also work with relevant IDB Group staff, including the Natural Capital Lab, to develop communication strategies aimed at bringing the project to the attention of other departments within Chile's government, other Latin American governments and private sector organisations.

2.16 **Component IV**: **Standards & certification (IDB Lab USD 7,500; Counterpart USD 114,045). The** component's objective is to identify key markets/investors and policies to map expectations and requirements across the industry, broken down by funder and funding type. An assessment tool and approach will be developed such that RCP can credibly and transparently display which assets meet which requirements, facilitating easier market access and reducing barriers to finance[12]. These requirements include:

- Key definitions (such as forestry)
- Baseline definitions and requirements

[12] For example, for access to CORSIA, units will require a corresponding adjustment to the host country inventory, thus being a specific requirement of that market. Hence, the approach developed by the project will allow RCP to display those assets that can be used in the context of CORSIA and other markets.

- Permanence
- Additionality
- Double Counting
- Safeguards

2.17 Once the assessment tool incorporates standards and requirements, the project will carry out a specific assessment based on the Chile pilot to provide gap analysis and recommendations. These findings will in turn be used to further refine the mapping and to make recommendations on which funding sources would be best suited.

2.18 Among other activities, workshops with key funding stakeholder groups will be held (for example the voluntary markets group, multilaterals, national bodies, private investors, etc.) with a view to (a) disseminating the framework and RCP approach, and (b) gain a better understanding of how to mainstream them, resulting in easier facilitation of payments.

2.19 **Component V**: **Pilot extensions (IDB Lab USD 17,500; Counterpart USD 176,406).** This component will focus on the identification of additional pilot projects beyond the first application with CONAF in Chile that would leverage the RCP platform to catalyze financial flows towards climate change mitigation, biodiversity and/or other environmental services/commodities.

2.20 The main activities will be: (i) Evaluation of the applicability of RCP system to result-based payments mechanism under the Chilean national circumstances and its applicability for additional market-based mechanisms and nature-based solutions; (ii) Assessment of the scope and applicability of RCP for agriculture land management, Afforestation/Reforestation and other potential land use projects in the framework of voluntary carbon standard requirements; (iii) Identification of alternative environmental services markets that can be tackled by the RCP platform, such as biodiversity quotes for voluntary commitments as well as the Payment for Environmental Services (PES) mechanisms connected to carbon markets and biodiversity schemes at national or regional level; (iv) Extension of the RCP platform, further prototyping and field-testing of data-gathering, measurement, results-based payment and/or unit-based investment systems to support the above.

2.21 The existing REDD+ contracts between the World Bank's FCPF and Chile will be among the priorities under this Component. In addition to the FCPF opportunity, this component also will explore other options to use the RCP Platform for land-use activities in Chile within the context of emerging international markets such as: (i) CORSIA or Article 6 of the Paris Agreement, voluntary carbon markets or upcoming domestic carbon pricing schemes in Chile[13]; and (ii) biodiversity compensation schemes and payment for ecosystem services.

2.22 Chile is currently considering deepening its use of carbon pricing instruments with the aim of facilitating the transition to a low carbon economy and achieving its NDC commitments. With support from the World Bank's Partnership for Market Readiness, Chile is assessing options around the enhancement of the existing

[13] See WB PMR Chile profile, and ICAP's report "Emissions Trading Worldwide – Status Report 2019"

carbon tax in Chile, the use of carbon offsets as a complementary measure to the carbon tax (as in the case of Colombia), and the possibility to transition to or supplement the carbon tax with an Emission Trading Scheme (ETS). The RCP platform would be of relevance for a domestic carbon offset scheme which allows for land-use activities, a form of which has already been implemented in Colombia.

2.23 The project will also seek opportunities for replication and scale beyond Chile. This will include the development of additional project concepts and respective project or transaction-level feasibility studies, as well as expressions of interest by new governments and investors, or buyers and sellers of environmental commodities such as carbon credits or biodiversity certificates. The IDB's Natural Capital Lab will also seek to determine appropriate funding sources for expansion of the project in Chile (through national resources, private investment, or donor resources such as the Global Environment Facility) and in other countries.

B. Project Results, Measurement, Monitoring and Evaluation

2.24 **Project Results.** The key results of the project will be: (1) a pilot for a new, highly scalable MRV system for forestry land-use management; (2) recommendations and/or candidate proposals for international bodies, governments and corporations for next-generation MRV standards and certification; (3) novel service blueprints with measurement instrument prototypes and (4) expressions of interest in piloting novel extensions to this platform (eg biodiversity MRV).

2.25 RCP platform will track the following KPIs (and will be able to demonstrate verifiable progress against each of them):

i. The percentage of CONAF staff that the system is designed to support, who are logging into the web-based or mobile applications on a regular basis.

ii. The number of alerts the pilot system generates that represent prioritised information or additional/improved insight/intelligence regarding forestry land-use.

iii. The results of a comparison between the pilot's land-use output and Chile UNFCCC baseline (and any adaptations this leads to).

iv. The increase in the area of land (as a percentage of the total area for which data is available) under improved forestry land-use management as a result of RCP's platform.

v. The number of pilots outside Chile involving RCP and its forestry land-use management tools (including but not limited to those generated by Component V) and substantiated by expressions of interest from governments, investors, buyers/sellers of environmental assets and/or standard setting bodies to explore the use of the RCP platform.

vi. The amount or resources (ie USD figure) mobilised through results-based payment or unit-based investment associated with the technology and mechanisms RCP develops.

III. Alignment with IDB Group, Scalability, and Risks

A. Alignment with IDB Group

3.1 The project is aligned with the IDB Lab business plan goal to support technology-leveraged interventions and to jointly execute operations with the Natural Capital Lab. RCP is a pioneering project embracing and connecting several disruptive technologies with stakeholder-friendly, framework-compliant, and standardized process. Chile's REDD+ strategy provides an enabled environment and the necessary framework for the implementation and scaling up of RC services.

3.2 The RCP platform will cater to government and partners in a not-for-profit structure, and it will engage several technology and local private sector participants on a competitive basis, supporting open innovation and leveraging technology in new ways to provide access to benefits schemes to rural communities and landowners. This is consistent with IDB Lab's goals to support innovation for the benefit of low-income populations, and the goal to test new models and serve as a laboratory for the Bank Group, and countries.

3.3 The project is also aligned with the goals of the IDB Natural Capital Lab, as it allows for the development of new financial products to support biodiversity. It falls within the Natural Capital Lab focal areas of innovations in conservation finance, landscapes, and forestry. The project is aligned with the strategic objective of facilitating access to finance for investment and climate change (as a cross-cutting issue) discussed in the Country Strategy (2019-2022).

3.4 100% of the total IDB funding for this project is invested in climate change mitigation activities. This contributes to the IDB Group's goal of increasing the financing of projects related to climate change to 30% of total approvals by the end of 2020.

B. Scalability

3.5 The RCP strategy and envisaged processes are very much geared towards rapidly achieving scale in forest area protection through higher quality MRV, lower transaction costs, and better stakeholder involvement.

3.6 The technology employed is inherently scalable – capable of performing land-use predictions and MRV for the entire planet. All developments in the areas of remote & local sensing indicate fast growth in MRV quality as well as rapid cost reductions (e.g. more and cheaper satellites and drones with higher quality sensing equipment).

C. Project and Institutional Risks

3.7 **Decentralization, scalability and data privacy/ownership.** The technologies deployed as part of RCP are at the cutting-edge. Although most elements can be termed 'tested' and 'ready for commercial application', a number of uncertainties, have yet to be dealt with. RCP will engage with academic and corporate partners on technology that can help mitigate this risk.

3.8 **Stakeholder adoption.** This risk will be mitigated on a stakeholder by stakeholder basis (concerning all of the various stakeholder groups – donor countries, recipient countries, UNFCCC, MLOs, local custodians, and technology partners). Given the very significant process advantages which RCP seeks to offer, stakeholder adoption risks might be regarded as limited. Nevertheless, RCP will pay close attention and shall also mitigate stakeholder risks from the outset with an active dialogue and awareness raising efforts, transparent project monitoring and results sharing, diligent pilot management and documentation, active communication on pilot success stories and platform advantages.

IV. Instrument and Budget Proposal

4.1 The project has a total cost of USD 2,205,450, of which USD 825,000 (37%) will be provided by the IDB Lab, and USD 1,380,450 (63%) by the Executing Agency and a group of counterparts from CONAF, C21, ETH Zurich's DS3Lab and Climate-KIC funding. The latter is subject to a final approval in mid-June 2019.

4.2 The instrument to be used is a grant, given RCP's cutting-edge research stage as well as the potential for exponential innovation.

4.3 **Retroactive Recognition of Counterpart Funds**. Project cash and in kind contributions from the date of project eligibility (10/2018) will be recognized, up to the amount of USD 550.000.

Project Components	BID Lab	Counterpart		Total Counterpart	Grand Total
		Cash	In kind		
Component 1: Pilot of a forestry land-use monitoring system	450,885	286,035	411,500	697,535	1,148,420
Component 2: Feasibility Reports	205,111	133,849	88,250	222,099	427,210
Component 3: Knowledge Dissemination	105,254	63,866	50,249	114,115	219,369
Component 4: Standards & certification	7,500	114,045	0	114,045	121,545
Component 5: Environment Finance Pilots	17,500	176,406	0	176,406	193,906
Administration	11,250	26,250	0	26,250	37,500
Evaluations*	10,000	0	0	0	10,000

Project Components	BID Lab	Counterpart		Total Counterpart	Grand Total
		Cash	In kind		
Ex Post reviews*	7,500	0	0	0	7,500
Contingencies	10,000	30,000	0	30,000	40,000
Grand-Summary, Total Project Budget	825,000	830,450	549,999	1,380,450	2,205,450
% of Funding-type	**37%**	**38%**	**75%**	**25%**	**100%**

*Indicates expenses which may be executed by the Bank, disbursed by the Bank and credited to the Bank, without a disbursement request by the Executing Agency

V. Executing Agency (EA) and Implementation Structure

A. Executing Agency(s) Description

5.1 The executing agency for the project will be South Pole. South Pole is a leading provider of global sustainability financing solutions and services, with over 300 experts in 18 offices around the world. For more than a decade, South Pole has worked with a wide range of public, private and civil sector organisations to accelerate the transition to a climate-smart society. The company's expertise covers project and technology finance, data and advisory on sustainability risks and opportunities, as well as the development of environmental commodities such as carbon and renewable energy credits. South Pole has mobilised climate-finance for over 700 emission reduction projects, including renewable energy, energy efficiency and sustainable land-use activities.

5.2 South Pole has a wealth of experience in climate change mitigation within the land-use sector, including a highly qualified and motivated team of 40 land-use experts around the world. The company has a strong presence in Latin-America and a deep level of understanding of the climate change policy landscape across the continent. South Pole is one of the world's market leaders when it comes to results-based finance schemes and market-based instruments that generate additional revenues for sustainable land-use activities, biodiversity conservation and other environmental services. South Pole is currently working on several proof-of-concepts around digital MRV solutions for land-use and renewable energy projects of immediate relevance for the RCP platform.

5.3 In addition to its role as Executing Agency vis-a-vis IDB and Climate-KIC, South Pole will also cover a clearly specified project scope through its world-leading Colombia-based forestry, biodiversity and environmental assessment teams, as well as its local team in Chile.

5.4 South Pole's local team in Chile will ensure coordination with CONAF and other local stakeholders in Chile.

B. Implementation Structure and Mechanism

5.5 South Pole will stablish a project management unit, which will coordinate project implementation with consortium partners to be contracted on a sole-sourcing basis, due their unique experience:

5.6 Cleantech21 (C21), a not-for-profit foundation based in Switzerland, is the Initiator of the Project. C21's vision and leadership in the sector has attracted a team of specialists from around the world and has provided the driving force behind the project from its inception, through all phases of its development to date. C21 will provide strategic guidance and oversight to the project, partner engagement and business development support; C21 will play an instrumental role in the evolution of the RCP concept and the establishment of the RCP platform.

5.7 RCP Developer Team, a collective of independent companies and academic partnerships organized by C21, has developed the concept and technical foundations of the RCP Platform over the last two years. It consists of two winning teams selected by an independent panel of experts (including representatives from UNFCCC, MIT and GIZ for example) as ultimate winners in the #Hack4Climate innovation program hosted by C21 in 2017 (including the hackathon competition at the UNFCCC COP24 in Bonn). This intensely competitive process received over 1000 high-calibre applicants from 30 different countries. From 1000 applicants, 100 were invited to participate in the hackathon competition and out of these 100, two winning teams (comprised of RCP Developer Team members listed below) have been selected. Following the hackathon competition in Bonn in 2017, members of the two winning teams have forged the RCP Developer Team as a collaborative consortium under the leadership of C21 to develop the RCP Platform concept.

5.8 According to this process, South Pole will contract RCP developer team, applying single-sole-source selections, due to their unique experience to develop the innovation RCP platform and the following elements:

(i) unique IP and the cutting-edge approach by the RCP Developer Team (combining advanced remote sensing technologies, big data and AI);

(ii) technical skills of RCP Developer Team members (including leading scientists and practitioners in their field) and the fact that several team members were already selected based on a highly competitive approach during the #Hack4Climate competition in Bonn;

5.9 The RCP Developer Team consists of the following companies and individuals (to be contracted on a single-sole-sourcing basis):

- Warren Advisory Services, has delivered 25+ applied machine learning projects for clients in 10+ countries. Led by Mr. Paul Warren, who studied Computer Science at Stanford.
- Agiup, led by Mr. James Collado, a specialist GIS/UX software consulting firm, with more than 12 years' experience.

- Scout Impact, led by Mr. Scott Hartop, an Impact R&D lab based in London, operating internationally. Scout is a pioneer in the application of AI, IoT and secure ledgers to impact verification, currently partnered in this space with DFID, Acumen and Tesco (the RCP platform will be interoperable with Scout's verification technology for automatically proving the integrity and authenticity of data gathered via sensors and mobile apps).
- ETH Zurich's DS3 Lab, led by Ce Zhang, explores state-of-the-art data management and machine learning techniques. DS3 is among the world's leading hubs for AI research.
- Micah Melnyk Research and Consulting, specialises in climate strategy and is a World Bank and development finance consultant. A former UNFCCC negotiator, Micah mentors several start-ups (including other groups originating from the Hack4Climate program).

5.10 Gold Standard Foundation is a Swiss non-profit dedicated to developing standards and assessment approaches that raise ambition for Climate and sustainable development action. The Gold Standard was established in 2003 by WWF and other international NGOs to ensure projects that reduced carbon emissions under the UN's Clean Development Mechanism (CDM) also contributed to sustainable development. Its next-generation standard launched in 2017, "Gold Standard for the Global Goals", allows climate and development initiatives to quantify, certify, and maximise their impacts toward climate security and sustainable development. Gold Standard now has more than 80 NGO supporters and 1400+ certified projects in over 80 countries, creating billions of dollars of shared value from climate and development action worldwide. The Gold Standard will develop, and pilot test the indicators and assessment approach for REDD+ schemes.

5.11 Ernst Basler & Partner (or EBP) is an independent enterprise founded in 1981, which offers a broad range of consulting, planning, construction, information technology and communications services with a focus on sustainable development. EBP has more than 500 employees located in different offices around the world. The company is present in Chile since 2012 and has been working with CONAF on sustainable land-use management and respective management systems applied by CONAF. EBP's experience, including previous work conducted for CONAF in the Valdivia region, is of crucial importance for the RCP pilot project. EBP will be contracted to assist South Pole and the RCP Developer Team on technical land-use management and land-use data aspects of the pilot project with CONAF on a sole-sourcing basis.

5.12 **Project governance** will be led by a Steering Committee (SC), a Project Leadership Group (PLG) and Project Management Unit (PMU).

5.13 The Steering Committee (SC) is comprised of representatives from IDB, Climate-KIC, CONAF, South Pole, and representatives of RCP developer team. The SC will oversee key decisions as it chooses or as recommended by the PLG. Spending deviations from the agreed budget for sums above USD 10,000 must be authorized unanimously by the PLG and endorsed by at least two other members of the SC who are not on the PLG.

5.14 The Project Leadership Group (PLG) – South Pole, Scout Impact and C21 – will convene as needed to monitor progress, resolve issues and ensure fiduciary and reporting commitments. Spending deviations from the agreed budget (that are within the project's gift and compliant with donors' terms) for sums of up to USD 10,000 can be approved unanimously by the PLG; if the three members cannot agree, issues will be referred to non-PLG members of the Steering Committee for resolution

5.15 The Project Management Unit, will be responsible for all research and technology development decisions, the coordination of all team members across participating partners (ie the RCP Developer Team) and all communication across critical partner interfaces.

VI. Compliance with Milestones and Special Fiduciary Arrangements

6.1 **Disbursement by Results, Fiduciary Arrangements.** The Executing Agency will adhere to the standard IDB Lab disbursement by results, Bank procurement policy and financial management arrangements as specified in Annex V and VI.

VII. Information Disclosure and Intellectual Property**

7.1 Information Disclosure. No project information is deemed confidential according to the Bank's Access to Information policy and/or the timing of the future release of confidential information.

7.2 Intellectual Property. All Project IP will remain open source and available for further development by the dedicated RCP platform to be set-up following successful piloting.