

*This translation **is not official**. It has been conceived as a supporting material to assist the English spoken parties interested in the bidding process. The official authentic document is the Spanish version.*

Official Bidding Specifications are those processed in the corresponding administrative act, i.e., Resolution No. 1.489 of the twelfth day of July of 2019 of the Undersecretariat of Telecommunications, approving by such act the public call for offers on the “Submarine cable project economic, technical, and legal feasibility study: The Asia-South America Digital Gateway”.

A copy of the aforementioned Bidding Specifications (Spanish) is available on the website <http://www.subtel.gob.cl/puertadigital> of the Undersecretariat of Telecommunications.

PUBLIC CALL FOR OFFERS ON THE
“PROJECT ECONOMIC, TECHNICAL, AND LEGAL
FEASIBILITY STUDY OF THE SUBMARINE CABLE
PROJECT: ASIA-SOUTH AMERICA DIGITAL GATEWAY”



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BIDDING SPECIFICATIONS

I. ADMINISTRATIVE SPECIFICATIONS

Article 1 INTRODUCTION

The strategic importance of Internet infrastructure and access services to national and human development is gaining ground worldwide, with the advent of myriad policies fostering access and extending networks for productive, social, and public management purposes alike.

Against that backdrop, as part of this administration's strategic pillars outlined in President Sebastián Piñera's June 2018 address, Chile has stated its interest in deploying a Submarine Cable between Chile and the Asia-Pacific region, which would enable South American countries to access a new digital highway for exchanging data traffic. Right now, international digital connectivity in the region is achieved primarily through submarine cables whose destination is in the United States and Europe (some of them underway). There is no direct physical digital connection with Asia, so developing this initiative is of great interest.

With all that said, the Government of Chile has decided to undertake the Submarine Cable Project: "Asia-South America Digital Gateway," which is designed to digitally connect South America to the Asian continent through the deployment of a submarine fiber-optic cable.

At present, the international submarine cables to which Chile is connected primarily connect the country to the United States and their respective branches to the rest of Latin America. There are no cables connecting Chile to other continents directly, so building the Asia-Pacific cable is an opportunity to provide redundancy and back-up for the cables already operating, as well as to provide connectivity to unserved places/regions.

The potential layout entails an approximate distance of 22,000 kilometers. The initial design provides for at least two pairs of fiber-optic cable with transmission capacity in line with current standards for this sort of system (dozens of Tbps).

The cable will have a landing point in mainland Chile. Because of the long distance, intermediate landing points between Chile and Asia are needed. Besides supporting the technical feasibility, the intermediate landing points will help aggregate the demand that will contribute to the project's economic sustainability.

Accordingly, the salience of the proposed project resides in the investment and deployment of the infrastructure: a new digital highway that would be the first of

its kind to establish a direct digital connection between the Southern Cone and the Asian continent.

As a result of all of the foregoing, a technical feasibility study is needed to evaluate the technical, regulatory, legal, and economic framework to define the best alternative for implementing the cable.

Administrative context

Corporación Andina de Fomento (hereafter “CAF”, its Spanish acronym), is a multilateral financial institution, involved in public international law, whose mission is to fuel the sustainable development of its shareholder countries and regional integration by funding development projects and programs in its member countries. As part of its mission, via Board Resolution No. 2226/2017 dated December 12, 2017, CAF approved the utilization of Non-Reimbursable Technical Cooperation Funding from the Regional Infrastructure Pre-Investment Program (hereafter referred to as “CAF-PPI” or the “Program”). The goal of the program is to fund tasks that support the member countries in designing, developing, and analyzing pre-investments in infrastructure projects that boost integration in the energy, transportation, and telecommunications sectors that have been prioritized by countries in the region.

Via Resolution P.E. No. 0607/2019, dated April 11, 2019, CAF approved funding to support the undertaking of the Asia-South America Digital Gateway Submarine Cable Integration Project (hereafter, the “Project”), in accordance with the request submitted by the Republic of Chile through the Ministry of Transportation and Telecommunications, in a memo dated June 19, 2018, signed by Mrs. Gloria Hutt Hesse, Minister of Transportation and Telecommunications, and Mrs. Pamela Gidi Masias, Undersecretary of Telecommunications.

Pursuant to the above memo, the Chilean Undersecretariat of Telecommunications (hereafter and indistinctly “Undersecretariat” or “SUBTEL”, its Spanish acronym) under the auspices of the Chilean Ministry of Transportation and Telecommunications, signed a Technical Cooperation Execution Agreement dated July 12, 2019—enclosed herewith—agreeing that the Undersecretary will serve as the Executing Body in implementing the project and that CAF shall serve as the body directly financing it.

Article 2 GENERAL OBJECTIVE AND SPECIFIC OBJECTIVES

General objective

Develop a prospective study determining the technical, legal, and economic feasibility needed to build a fiber-optic submarine cable between South America and Asia.

Specific objectives

- a) Analyze and weigh the economic factors (supply and demand) involved in implementing the international submarine cable integration project.
- b) Prospect main sources of traditional and disruptive demand leverage the transpacific cable project pursuant to traffic forecasts.
- c) Analyze and recommend the regulatory framework needed to deploy and operate the international submarine cable.
- d) Analyze and weigh the technical factors, stating which are suggested for optimal design and layout conditions—a desktop study—to implement the international submarine cable integration project.
- e) Analyze the substitutability of the supply, considering other infrastructure and technologies.
- f) Quantify the impacts the initiative will have on the regional economy, taking into account the growth in inter-regional traffic, and analyzing at minimum the impact on interconnection costs, final Internet service prices, and outcomes for the connection quality.
- g) Beginning with a connectivity approach, describe how the project will serve as a lever for integrating digital networks and markets in South America. Propose in a clear way and conceptualize the impacts for other countries in the region.
- h) Devise different business options/models alongside the corporate, operating, and governance models, that would go along with the deployment of the international submarine cable.
- i) Determine the group of countries that will be the most suitable “landing points” for the submarine cable along the pathway from South America through Chile to Asia.
- j) Conduct an in-depth study of the chosen route, considering the economic, technical, and legal framework.
- k) Present a profitable business case(s) for investors.
- l) Analyze risks and how to manage them, considering construction, commercial, market, and other factors.

Article 3 COMMUNICATIONS AND DEADLINES

All communications made as part of this Public Bidding process shall be done to the e-mail digitalgateway@subtel.gob.cl.

Deadlines referenced in these Bidding Specifications are business days, unless otherwise stated. Non-business days shall be understood as Saturdays, Sundays, and holidays in Chile. If the final day of a deadline period falls on a non-business day, the deadline will be understood as automatically extended to the next business day.

Article 4 TENDER LANGUAGE

The entire bidding process will take place in the Spanish language. However, bids may be accepted in English, with the bidder assuming responsibility for how that information will be interpreted. Bear in mind that all documents comprising the offer shall be submitted in the English or Spanish language. Should any of the documents have been originally issued in a language other than English or Spanish, they need to come with a duly translation.

Article 5 BIDDING PROCESS STAGES AND TIMELINE

- a) **Call and Publication of the Bidding Specifications:** These Bidding Specifications shall be published on the website <http://www.subtel.gob.cl/digitalgateway> on July 15, 2019.
- b) **Questions and clarifications:** Bidders may pose questions about the content of this proposal by sending them to the e-mail address digitalgateway@subtel.gob.cl from July 15, 2019 to July 26, 2019.

Likewise, answers shall be published on the website <http://www.subtel.gob.cl/digitalgateway>, no later than August 1, 2019. These answers shall be considered an integral part of the rules governing this bidding process. Only questions submitted by the deadline listed above to the e-mail address listed above shall be answered.

- c) **Deadline for submission offers:** The deadline for receiving offers shall be August 16, 2019, at 2:00 p.m. (Continental Chile Time, GMT-4) Up until the date and time mentioned above as the deadline for accepting offers, all documentation can be delivered in physical format to the Undersecretariat of Telecommunications Reception Desk, as stipulated and provided for in these Bidding Specifications in each case.

- d) Opening proceedings:** The technical and economic opening of the offers shall commence on August 16, 2019 at 4:00 p.m. at the offices of the Undersecretariat, located at Amunátegui No. 139, Santiago, Chile.
- e) Offers Evaluation:** The offers shall be evaluated within seven (7) business days from the day after the opening. During this stage, SUBTEL may contact bidders about the content of their offers. Bidders must submit their clarifications before a deadline informed by SUBTEL.
- f) Award:** The bidding process shall be awarded within five (5) business days after the end of the offers evaluation period.

Should any of these time periods end on a Saturday, Sunday, or holiday, the time period will be understood as extended to the following business day.

For all legal purposes related to the time periods referenced in this document, the official time in Continental Chile Time shall be understood as the time listed on the website: http://www.horaoficial.cl/index_ing.php.

Moreover, to respect the opening hours of the Undersecretariat's office, if the deadline for accepting offers falls on a Monday or the day after a non-business day, the cut-off time shall be the following business day at 2:00 p.m.

Article 6 CHANGING THE BIDDING SPECIFICATIONS

The Undersecretary shall be entitled to change the Bidding Specifications of the Bidding Specifications, through a full administrative procedure, either on its own initiative or in response to a clarification requested by one of the suppliers, until the cut-off time for accepting bids, extending—if necessary—the deadline for receiving bids by up to five (5) business days so that the suppliers can become familiar with and adjust their bids to the new requirements. Any changes made shall be reported in a timely manner on the website <http://www.subtel.gob.cl/digitalgateway> and shall be an integral part of the bidding process.

Article 7 REQUIREMENTS TO PARTICIPATE IN THE BIDDING

Any individual or juridical person, national or foreign, shall be entitled to participate in this Bidding process, as long as they are not (i) tied to any activity in violation of: (a) any local standard of any country, of any CAF member country, or any regional, supra-national, or community standard pertaining to asset laundering and prevention of financing to terrorism; and/or (b) any principle, recommendation, or provision issued by the United Nations Organization, and/or any other body dedicated to fighting asset laundering and the prevention of financing to terrorism; and/or (ii) on any of the blacklists made

for cause or due to the violation of any of the standards, principles, and/or recommendations listed in the foregoing numeral (i); and/or (iii) at the sole criterion of CAF, fails to meet the applicable internal CAF requirements and regulations pertaining to the asset laundering and terrorism financing prevention policy; and/or (iv) shall not be engaged in, directly or indirectly, two service contracts financed by CAF resources at the same time, without the express written consent of the CAF; and/or (v) none of the members of the consulting firm(s) shall belong, directly or indirectly, to the permanent or temporary staff of the Executor, or have belonged to the staff within the twelve (12) months prior to the date of the submission of the offer. The same rule shall apply to anyone who has been on the CAF staff.

Individuals and/or juridical persons may submit bids individually or as a consortium.

A consortium shall be understood to mean any partnership of individuals and/or entities formed to submit an offer.

If the bidders agree to submit their offer using that model, they shall state their express desire to do so in their proposal, and also attach the public or private instrument, signed by all members of the consortium, formalizing their agreement to act in conjunction, and which shall establish, at minimum, the joint responsibility of the parties to each and every obligation entered into with this Undersecretariat, and shall also name a power of attorney or common representative with sufficient powers to represent each and every one of the members in submitting the offer and all of the documents attached to it throughout the entire bidding process, the formalization of the contract, and fulfillment of each and every one of the obligations contained therein. If the agreement is done via a private instrument, it shall at minimum have been signed before a Notary Public. The timeframe agreed on for the validity of the consortium shall not be less than the timeframe stated in article 18, letter a) of these Administrative Specifications.

Any individuals and/or entities belonging to the consortium shall meet, on an individual basis, each and every one of the requirements and legal formalities required in these Bidding Specifications. Likewise, any acts, facts, and omissions that arise as the bidding process develops shall affect all members likewise, considered on an individual basis.

Liability for complete fulfillment of the requirements and conditions stipulated in these Bidding Specifications and any contractual obligations that may arise from the award, shall fall jointly to each and every member of the consortium.

Article 8 SUBMISSION AND CONTENT OF THE PROPOSALS

The offer consists of a technical offer, an economic offer, and the administrative documentation.

The only valid form of submission for bids shall be via the e-mail address digitalgateway@subtel.gob.cl and no bids submitted via any other channel shall be accepted. Bids shall be valid until the administrative decision awarding the bidding process is fully processed.

Bidders shall send all background documentation required by e-mail. The following documentation shall be attached:

a) Content of the Technical Offer:

A description of the contents of each of the items listed below is provided in detail in the Technical Specifications, Chapter I.

- 1) Documentation of the experience of the bidding individual or entity or the members of the consortium, as applicable (Appendix No. 8).
- 2) Certificates of any consulting performed or ongoing, or if unavailable, copy of consulting contracts.
- 3) Resume of the Project Leader.
- 4) Copy of the professional degree of the Project Leader.
- 5) Members and experience of the technical Team and Project Leader (Appendix No. 7).
- 6) Copy of the professional degree of each member of the technical Team.
- 7) Introductory report to the topic of this bidding process.
- 8) Description of the works to perform and the method behind them.
- 9) Work Plan or Gantt Chart.

Note 1: E-mail submission is mandatory in order for the offer to be admissible.

Note 2: Let it be known that the mere submission of an offer to this bidding process shall imply that the bidders have analyzed the Administrative and Technical Specification, clarifications, and responses published before submitting the offer, and state their unreserved agreement and acceptance of all the aforementioned documentation, and shall not be able to change the Bidding Specifications with their offers.

b) Content of the Economic Offer:

Bidders shall submit an economic offer clearly stating the total value for the services offered, **TAX INCLUDED**. Likewise, bidders shall complete the table enclosed in Appendix N° 6 of these Bidding Specifications, clearly stating the net value for performing the offered study. Prices shall be stated in United States

dollars and shall not exceed the maximum budget available for the contract, which is determined in Article 14, letter a) of these Bidding Specifications.

Any bidders not subject to paying taxes on this assignment shall clearly state that.

c) Administrative documentation to participate in the bidding:

Affidavit from the bidder, signed by the bidder if it is an individual or by the legal representative if it is an entity, affirming that: (i) they are not tied to any activity in violation of: (a) any local standard of any country, or any regional, supra-national, or community standard pertaining to asset laundering and prevention of financing to terrorism; and/or (b) any principle, recommendation, or provision issued by the United Nations Organization, and/or any other body dedicated to fighting asset laundering and the prevention of financing to terrorism; and/or (ii) on any of the blacklists made for cause or due to the violation of any of the standards, principles, and/or recommendations listed in the foregoing numeral (i); and/or (iii) at the sole criterion of CAF, fails to meet the applicable internal CAF requirements and regulations pertaining to the asset laundering and terrorism financing prevention policy; and/or (iv) shall not be engaged in, directly or indirectly, two service contracts financed by CAF resources at the same time, without the express written consent of the CAF; and/or (v) none of the members of the consulting firm(s) shall belong, directly or indirectly, to the permanent or temporary staff of the Executor, or have belonged to the staff within the twelve (12) months prior to the date of the submission of the offer. The same rule shall apply to anyone who has been on the CAF staff. For this purpose, the affidavit template is enclosed to these Bidding Specifications (Appendix N°1 or Appendix No. 2).

d) Special conditions for bidding as a consortium:

1. If the bidders choose to submit an offer under this model, they shall state it explicitly in their proposal, and at the same time enclose a publicly notarized document or authenticated private document signed by all of the members formalizing their agreement to act together.
 - a. If the agreement submitted at the time of the offer is an authenticated private document, the same agreement needs to be submitted as a notarized document prior to signing the contract.
 - b. The agreement shall clearly state that the liability of each of the consortium members shall be joint, and shall meet the rest of the requirements outlined in this article of these Administrative Specifications.

- c. The timeframe agreed on for the validity of the consortium shall not be less than the timeframe stated in Article 18, letter a) of these Administrative Specifications.
 - d. Liability for complete fulfillment of the requirements and conditions stipulated in these Bidding Specifications and any contractual obligations that may arise from the award, shall fall jointly to each and every member of the consortium.
 - e. Finally, in the aforementioned agreement, each and every one of the individuals and/or entities belonging to the consortium shall designate a common legal representative with sufficient powers to act on behalf of all of them, listing these powers. Likewise, they shall state the individual or entity (member or representative) empowered to receive payment.
2. Each individual and/or entity belonging to the consortium shall submit an affidavit signed by the individual and/or entity or by their legal representative—as is applicable—affirming that: (i) they are not tied to any activity in violation of: (a) any local standard of any country, or any regional, supra-national, or community standard pertaining to asset laundering and prevention of financing to terrorism; and/or (b) any principle, recommendation, or provision issued by the United Nations Organization, and/or any other body dedicated to fighting asset laundering and the prevention of financing to terrorism; and/or (ii) on any of the blacklists made for cause or due to the violation of any of the standards, principles, and/or recommendations listed in the foregoing numeral (i); and/or (iii) at the sole criterion of CAF, fails to meet the applicable internal CAF requirements and regulations pertaining to the asset laundering and terrorism financing prevention policy; and/or (iv) shall not be engaged in, directly or indirectly, two service contracts financed by CAF resources at the same time, without the express written consent of the CAF; and/or (v) none of the members of the consulting firm(s) shall belong, directly or indirectly, to the permanent or temporary staff of the Executor, or have belonged to the staff within the twelve (12) months prior to the date of the submission of the offer. The same rule shall apply to anyone who has been on the CAF staff. For this purpose, the affidavit template is enclosed to these Bidding Specifications (Appendix N°1 or Appendix No 2).
3. Looking at the background information requirements compromising the Technical Specification, which are listed in this article, in the section “Content of the Technical Specification,” when offers are submitted, the members of the consortium shall determine which information to submit for consideration in the evaluation, as long as no information salient to executing the respective contract that would affect any member of the consortium is concealed.

4. If any of the consortium members becomes affected by any of the causes for ineligibility to submit an offer, design a proposal, or enter into an agreement, stipulated in the current laws, that member shall state in writing if they continue with the respective contracting procedure with the remaining members ineligible for it, or chooses to withdraw from the process, within three (3) business days from which time the Undersecretariat requests this decision for this purpose.
5. The foregoing is notwithstanding that this Undersecretariat shall be entitled to analyze whether the proposal resulting from the consortium of eligible members meets the minimum requirements set in the Bidding Specifications and the information required to evaluate it pursuant to the criteria contained in these Bidding Specifications and in accordance with legal and regulatory standards applicable to these matters.

Omission or dishonesty in any of the background information or documentation listed in this article, or the decision to submit this information or documentation through a channel other than the expressly stated channel, shall exclude the bidder who has done so from the bidding process, declaring that bidder's offer inadmissible via a resolution with cause, for failure to comply with the requirements stipulated in these Bidding Specifications.

Notwithstanding the foregoing, the Undersecretariat shall be entitled, during the offer evaluation stage, to ask any bidder to clarify their offer or rectify formal errors or omissions, as long as these requests do not entail, under any circumstance, a violation of the principles of bidder equality and strict adherence to the Bidding Specifications, which shall be evaluated and resolved by the Undersecretariat.

Any expenses and costs of any nature incurred by the bidders as part of their study and submission of their offers shall be solely charged to them and be their responsibility. No compensation, indemnity, or reimbursement of any sort shall apply for any of these items.

Article 9 REQUIRED LEGAL DOCUMENTS TO CONTRACT

a) A. Juridical Person Constituted in Chile:

1. Introduction Letter stating or containing:
 - a. Legal business name.
 - b. Trade name, if applicable.
 - c. Name, and ID number of the legal representative.
 - d. Business address.
 - e. Telephone number and e-mail address.

- f. Name of the bidder's legal representative for all purposes of this bidding process, as well as their job title, telephone number, and e-mail address.
2. Photocopy of the Unique Tax ID (*Rol Único Tributario*).
 3. Photocopy of the ID card of the legal representative.
 4. The following legal documentation for the bidder:
 - a. Limited liability companies or groups shall attach a photocopy of enrollment in the Commerce Registry, with certification of its validity, or photocopy of the Certificate of Validity (*Certificado de Vigencia*), granted by the Real-Estate and Commerce Registrar, and photocopy of the document demonstrating the legal capacity of the legal representative.
 - b. Entities that are not limited liability companies, shall attach the documents certifying their validity and the legal capacity of their legal representative, issued by the appropriate authorities.
 - c. Companies governed by Law No. 20.659, which simplifies the Regime for Incorporating, Amending, and Dissolving Corporations, shall enclose a Digital Certificate of Migration to the Simplified Regime (*Certificado Digital de Migración al Régimen Simplificado*) or Certificate of Migration to the General Regime (*Certificado de Migración al Régimen General*), as is applicable, as well as the Certificate of Validity (*Certificado de Vigencia*), Certificate of Updated Bylaws (*Certificado de Estatuto Actualizado*) and Certificate of Inscription (*Certificado de Anotaciones*) for the company, as stipulated in Article 29 of Supreme Decree No. 45, from 2013, of the Ministry of Economy, Development and Tourism, which approves the Regulations for Law No. 20.659, simplifying the law to incorporate, amend and dissolve companies.
 5. Affidavit, duly signed, affirming that the ineligibilities and prohibitions outlined in Article 4, section 1 and 6 of Law N° 19.886 do not affect the bidder and that the bidder has not been convicted of any of the crimes outlined in Articles 10 and 8 of Law 20.393, which establishes Criminal Liability for Corporations in Asset Laundering Crimes, Terrorism Financing, and Bribery Crimes (as shown in the form contained in Appendix N° 1 to these Bidding Specifications).

b) Chilean Natural Persons:

1. Introduction Letter stating or containing:

- a. Name.
 - b. ID card number of the bidder and Taxpayer number if applicable.
 - c. Business address.
 - d. Telephone number and e-mail address.
2. Photocopy of ID card and RUT, if they have one, in a sector in which the Bidder pays taxes in the first category of the Income Tax Law.
 3. Documentation showing the commencement of business (iniciación de actividades) filed before the Internal Revenue Service.

c) Foreign natural or juridical persons:

They shall attach any documentation necessary to show their legal existence pursuant to the regulations in their country of origin and the legal personality of whomever submits the proposal on their behalf, dated no earlier than ninety (90) calendar days counted back from the date of the offer submission. In order to simplify the authentication process, the suggestion is to enclose an Apostille with any documentation, issued by the competent authority in the origin country, for those countries that belong to the Hague Apostille Convention¹.

d) Consortiums:

If the bidders submit together, each member shall submit the documents listed in this section, as is applicable to each member (individual or entity).

Moreover, they shall enclose a public notarized document or an authenticated private document showing the incorporation of the consortium, and establishing joint liability among the parties, and naming a common representative or power of attorney with sufficient powers, as well as the timeframe of the agreement. In turn, if the consortium files a privately authenticated document, they shall have it formalized via a publicly notarized document once the bidding process has been awarded. The valid timeframe for these unions shall be longer than the term of the contract by at least 60 calendar days. Notwithstanding the above, the Undersecretary shall be entitled to request any additional information needed to protect its interests before entering into any agreement. If the winning bidder is a juridical person, the Undersecretariat may request any of the following documentation:

1. Photocopy of enrollment of the company in the Commerce Registry, with certification of validity, dated no earlier than three months from the date of submission (this document shall only be required if the proposal included

¹ <https://www.hcch.net/es/instruments/conventions/specialised-sections/apostille/>

- a photocopy of the Certificate of Validity (Certificado de Vigencia), instead of a copy of the enrollment with margin notes and certification of validity).
2. Photocopy of the record proving legal incorporation and any subsequent modifications made, if there are any.
 3. Photocopy of the excerpted publications in the Official Gazette and inscription in the corresponding registries, of the records listed in the preceding point.
 4. Certificate of validity of the legal personality of the legal representative.
 5. Foreign juridical persons shall attach any documentation necessary to show their legal existence pursuant to the regulations in their country of origin and the legal personality of whomever submits the proposal on their behalf, dated no earlier than ninety (90) calendar days counted back from the date of the offer submission. In order to simplify the authentication process, the suggestion is to enclose an Apostille with any documentation, issued by the competent authority in the origin country, for those countries that belong to the Hague Apostille Convention².

Finally, bear in mind that the Undersecretariat shall not hire any companies that have been convicted of the crimes outlined in Article 27 of Law No. 19.913, Article 8 of Law No. 18.314, and Articles 250 and 251 bis of the Criminal Code, with the penalty of a prohibition on entering into acts or contracts with State Agencies. Should the winning supplier be subject to this prohibition, the bidder shall be understood to have withdrawn its offer, notwithstanding the fact that this Undersecretariat may in parallel award the second-highest scoring supplier the biddin process or may declare the biddin process void.

Article 10 OFFER EVALUATION COMMITTEE

Offers shall be reviewed and evaluated on a technical and economic basis by a Committee consisting of three (3) public officials, either full-time staff or for hire, who currently render services in the Undersecretariat of Telecommunications, and who in turn shall not be members of the Undersecretariat's Technical Counterpart described in Article 16 of these Administrative Specifications.

The officials designated as evaluators shall not be entitled to take part in the evaluation if they are subject to any of the prohibitions in accordance with Title III, paragraph 5, Article 84, letter b, of DFL No. 29, of 2004, which sets forth the amended, coordinated, and systematized text of the Administrative Bylaw, or shall abstain pursuant to the provisions of Article 12 of Law 19.880, on the

² <https://www.hcch.net/es/instruments/conventions/specialised-sections/apostille/>

Administrative Procedures Terms and Conditions that govern State Administration Agencies, as well as the provisions of numeral 6 of Article 62 of DFL No. 1/19.653, of 2001, which sets forth the amended, coordinated, and systematized text of Law No. 18.575, the Constitutional Document on the General Rules for State Administration.

In order to demonstrate the above, members of the Evaluation Committee shall sign and enclose a “Conflict of Interest Affidavit” during the offer evaluation stage. This document shall be submitted to the platform <http://www.subtel.gob.cl/digitalgateway>, together with the award resolution and evaluation report.

The Committee shall issue a report with an evaluation of the offers, with a score assigned to each bidder pursuant to the evaluation criteria outlined in these Bidding Specifications. This report shall be signed by the Committee and published on <http://www.subtel.gob.cl/digitalgateway>, alongside the resolution with cause stating the outcome of the bidding process.

The Evaluation Committee, as part of its collaboration with the Senior Director of the Service, shall also answer questions and respond to claims filed during the bidding process and about the reward or declaration to void the bidding process, however the case may be.

Article 11 OPENING AND EVALUATING THE OFFERS

This is a one-stage bidding process, meaning that during the electronic opening of the offers, both the technical and economic offers will be opened.

Receipt of documentation shall be accepted or rejected, without this communication entailing acceptance of the content therein, or indicating that the file is neither valid nor correct. The Undersecretariat’s Evaluation Committee shall proceed to review and evaluate the requirements stipulated in these Bidding Specifications, disqualifying anyone who does not meet the requirements. Nevertheless, the Evaluation Committee shall also be entitled to ask any bidder by e-mail to clarify or rectify errors or omissions related solely to formal aspects, as long as these requests do not violate the principle of equal treatment of the bidders and strict adherence to the Bidding Specifications.

Bidders shall clarify or rectify their offers within the timeframe running from the date the request is published and the penultimate business day of the term set for evaluating the proposals, by e-mail, or, if applicable, by submitting the required documents directly to the Undersecretariat of Telecommunications Reception Desk in a sealed envelop addressed to the Manager of the Telecommunications Development Fund Division, labeled: “Supplementary Documentation for Public Tender titled: Economic, Technical, and Legal

Feasibility Study for the Submarine Cable Project: ‘Asia-South America Digital Gateway’, and the name of the bidder.

The various offers shall be scored and the selection process conducted pursuant to the following criteria:

Evaluation criteria

1. Economic offer.

- a) Weight: 10%
- b) Total maximum score: 100 points
- c) Calculation method:

100 points shall be assigned to the lowest-price offer(s), which shall be called “min price.” 0 points shall be assigned to any offer(s) that exceed the amount allocated to the study. All other offers shall be scored using the following formula:

$$Score = \frac{min\ price}{offer\ price} \times 100$$

2. Bidder experience (natural or juridical person) in performing similar projects (*):

- a) Weight: 25%
- b) Total maximum score: 100 points
- c) Calculation method:

This factor will be assessed based on the experience accumulated over the past ten years on studies developed that are similar to those described in the Technical Specifications and which shall be proven via certificates or copies of the completed contracts or ongoing contracts for the respective studies listed in the offer.

No. of feasibility studies for building trans-national fiber-optic submarine cables of a similar nature and size. (A)	Score
5 or more	100
Between 3 and 4	80

Between 1 and 3	50
Less than 1	0

No. of traditional and disruptive demand prospecting studies performed on projects of a similar nature and size. (B)	Score
5 or more	100
Between 3 and 4	80
Between 1 and 3	50
Less than 1	0

Length of the submarine cables that were the subject of the completed feasibility studies. (C)	Score
More than 25,000 kms.	100
Between 10,000 and 25,000 kms.	80
Between 5,000 and 10,000 kms.	50
Less than 5,000 kms.	0

The final score for Bidder Experience shall be the average of the three tables and shall reach a maximum of 100 pts.

$$Score = \frac{A + B + C}{3}$$

(If the bidder is a consortium, for weighing the criteria, the sole and exclusive consideration shall be given to the experience of the member, among those who have documented their experience in this bidding process that has shown the highest number of consulting experiences out of all of the members.*

3. Education and Experience of the Project Leader and Team.

- a) Weight: 20%
- b) Total maximum score: 100 points.

The education and experience of the Project Leader and members of the proposed Team shall be evaluated.

The information pertaining to this criterion shall be evaluated based on the resumes, degrees, and certifications the Project Leader and the Team have, including academic degrees, professional experience, experience on similar projects, and other information pertaining to the tender provided for evaluation pursuant to these stipulations. The total weighting given to this item is the outcome of the evaluation of the Project Leader and the individual evaluations of the members of the proposed Team.

Criterion	Sub-criterion		Score
Education and experience of the Project Leader and proposed team.	Evaluation of the Project Leader	Education and experience of the Project Leader.	40
	Evaluation of the proposed team	Education and work experience of the members of the proposed team. Excluding the Project Leader.	60

3.1. Sub-Criterion Evaluation of the Project Leader:

- a) Maximum score: 40 points.

Education of the Project Leader	
Description	Score
Project Leader with a professional degree in a related field.	8
Project Leader with a technical degree in a related field.	4
Project Leader with a professional degree in a non-related field.	0
For purposes of the evaluation of the Project Leader, professional or technical degrees pertaining to Economics, Finance, Business or Civil Engineering, Telecommunications, Electrical Engineering, and Geology shall be considered related.	

Experience of the Project Leader

(Max cumulative score: 32 points)		
Description	Evaluation	Evaluation
At least one experience on submarine fiber-optic cable network market study projects.	Meets this criterion.	3
	Does not meet this criterion.	0
At least one experience on characterizing and analyzing demand for existing commercial submarine fiber-optic cable networks.	Meets this criterion.	3
	Does not meet this criterion.	0
At least one experience in grid planning and forecasting technological changes related to the convergence of expected services for the industry in the medium and long term.	Meets this criterion.	3
	Does not meet this criterion.	0
Having worked in the telecommunications sector, preferable in submarine FO services.	Meets this criterion.	3
	Does not meet this criterion.	0
Public and private telecommunications studies and/or projects in Chile or abroad.	Meets this criterion.	3
	Does not meet this criterion.	0
Studies on the effects in industry related to introducing bills with legal amendments, analyzing potential litigation, and anticipating mitigation mechanisms.	Meets this criterion.	3
	Does not meet this criterion.	0
Economic impact studies on: ICT policy and/or the digital gap, and/or telecommunications public policy strategy, and/or evaluating ICT projects.	Meets this criterion.	3
	Does not meet this criterion.	0
Studies conducting economic characterizations of the telecommunications industry in such areas as: investment levels, operating and service conditions in the Chilean territory.	Meets this criterion.	3
	Does not meet this criterion.	0
The Project Leader has held a managerial position on projects in any of the above areas.	Meets this criterion.	8
	Does not meet this criterion.	0

The information provided in the resume submitted as part of the proposal shall be used to evaluate the education and experience of the Project Leader.

3.2. Sub-criterion of evaluation of the proposed Team:

a) Maximum score: 60 points.

To earn this score, the consultant shall furnish the minimum number of members required in the Technical Specifications.

The Team Evaluation will be done based on the average score of all members (excluding the Project Leader). In other words, this score will be the sum of the scores of each member, divided by the number of people making up the Team, without counting the Project Leader.

b) Calculation method:

$$Team\ evaluation = \frac{\sum\ individual\ scores}{No\ of\ members}$$

Education of proposed Team members	
Description	Score
Has completed <u>continuing education</u> in areas related to the tender.	10
Has <u>professional education</u> in areas related to the tender.	5
Does not have any education related to the tender.	0
For purposes of the proposed Team members, continuing education in related areas shall refer to any additional education or post-graduate education (certifications, diplomas, master's, and doctoral degrees) pertaining to the fields of economics, civil engineering, electrical engineering, and telecommunications. Certificates and degrees must be submitted in all cases.	

Professional experience of proposed Team members		
(Max cumulative score: 50 points)		
Description	Evaluation	Score
Expertise in or at least one experience with economic impact studies on: ICT policy and/or the digital gap, and/or telecommunications public policy strategy, and/or evaluating ICT projects.	Meets this criterion.	5
	Does not meet this criterion.	0
Expertise in or at least one experience with studies conducting economic characterizations of the telecommunications industry in such areas as: investment, operating and service conditions worldwide.	Meets this criterion.	5
	Does not meet this criterion.	0
Expertise in or at least one experience with industrial organization studies for the	Meets this criterion.	5

Professional experience of proposed Team members		
(Max cumulative score: 50 points)		
transportation and services market, the intermediate and end-user telecommunications market, in particular, submarine FO cable.	Does not meet this criterion.	0
Expertise in or at least one experience with studies analyzing the development and evaluation of projects related to submarine FO..	Meets this criterion.	5
	Does not meet this criterion.	0
Expertise in or at least one experience on public and private telecommunications studies and/or projects in Chile or abroad.	Meets this criterion.	5
	Does not meet this criterion.	0
Knowledge of or at least one experience with sizing and designing submarine FO networks.	Meets this criterion.	5
	Does not meet this criterion.	0
Expertise in or at least one experience with characterizing and analyzing demand for existing commercial submarine fiber-optic cable networks.	Meets this criterion.	5
	Does not meet this criterion.	0
Expertise in or at least one experience with maintenance of submarine FO to enable forecasting operating conditions.	Meets this criterion.	5
	Does not meet this criterion.	0
Expertise in or at least one experience in grid planning and forecasting technological changes related to the convergence of expected services for the industry in the medium and long term.	Meets this criterion.	5
	Does not meet this criterion.	0
Expertise in or at least one experience with developing detailed technical specifications for implementing submarine FO networks.	Meets this criterion.	5
	Does not meet this criterion.	0

4. Execution Timeline.

- a) Weight: 10%
- b) Total maximum score: 100 points
- c) Calculation method:

The time period to complete the entire study, as long as it is shorter than or equal to the time period stipulated in Appendix No. 6, to submit each report. The

offer with the shortest execution timeline will earn a 100-point score. All other offers shall be assigned a score pursuant to the following:

$$SCR = \frac{SET}{BET} \times 100$$

Where:

SCR: Bidder’s Execution Timeline Score
SET: Shortest Execution Timeline (out of all the bidders).
BET: Bidder’s Execution Timeline

Each report can earn a maximum of 100 points. The final score for the Execution Timeline criterion shall be weighted as follows:

Report No. 1: 40%, maximum timeline 63 days.
 Report No. 2: 40%, maximum timeline 53 days.
 Final report: 20%, maximum timeline 180 days.

5. Description of the study to perform, method, and work plan.

- a) Weight: 15%
- b) Total maximum score: 100 points
- c) Calculation method:

Good: The technical specifications includes: a breakout and development of each activity involved in the study; a work methodology to follow; the details of the activities to carry out and the deliverable to submit to the Undersecretariat; a list of the consultants that will be working directly on each activity; description of all of the activities and assumptions to obtain the required estimates; explanation of how the proposed work methodology will tackle the scope of the study and meet the general and specific objectives; a Gantt Chart with the timeframes and a detailed timeline for each of the activities required.

For the proposed working methodology, the technical specifications includes: Use of available information sources and a definition of justified assumptions in those areas where information is not available; development of assumptions pursuant to expert judgment, with a rationale;(*) a list of the variables and how they will be measured, with a rationale; a statement of the analysis and calculation methods to be used to estimate financial flows, with a rationale: **100 points.**

Fair: The technical specifications includes: a breakout and development of each activity involved in the study; a work methodology to follow; the details of the

activities to carry out and the deliverable to submit to the Undersecretariat; However, the proposal is not clear enough about any of the following aspects: list of the consultants that will be working directly on each activity; description of all of the activities and assumptions to obtain the required estimates; explanation of how the proposed work methodology will tackle the scope of the study and meet the general and specific objectives; a Gantt Chart with the timeframes and a detailed timeline for each of the activities required.

For the work methodology, the technical specifications are insufficiently clear as to any of the following aspects: Use of available information sources and a definition of assumptions in those areas where information is not available; development of assumptions pursuant to expert judgment; a list of the variables and how they will be measured, with a rationale; a statement of the analysis and calculation methods to be used to estimate financial flows, with a rationale: **40 points.**

Unsatisfactory: The proposal is insufficiently clear as to a breakout and development of each activity involved in the study; a work methodology to follow; the details of the activities to carry out and/or the deliverable to submit to the Undersecretariat: **0 points.**

Note: It shall be understood that the bidder provides the requirements listed in these Technical Specifications with a rationale as long as it uses a qualitative or statistical method that provides additional justification for the expert opinion, in terms of clarifying what are the trends looking to the future and their impact on traffic.

6. Degree of understanding, diagnosis, and forecast by the bidder of the main scopes of the submarine cable between Asia and South America, considering demand, investment, and exploitation models under the Public-Private Partnership Model, a regulatory analysis of the public sector, all of the foregoing with a particular emphasis on telecommunications, pursuant to the introductory report to the topic of the tender. Understanding associated with submarine cable as a facilitator of network and digital market integration in South America. Propose in a clear way and conceptualize the impacts for other countries in the region.

- a) Weight: 20%
- b) Total maximum score: 100 points
- c) Calculation method:

Full understanding of the issue posed and the specific diagnosis of the current situation in the context right now of a submarine cable between Chile and Asia, as well as its impact on the region: **100 points.**

Fair understanding of the issue posed and the specific diagnosis of the current situation of a submarine cable between Chile and Asia, as well as its impact on the region: **50 points**.

Weak understanding of the issue posed and the specific diagnosis of the current situation in the context right now of a submarine cable between Chile and Asia, as well as its impact on the region: **0 points**.

Full understanding: Analyze, contextualize, and describe the current state-of-the-art on matters pertaining to connectivity and submarine FO network infrastructure and implications for development in Chile, citing sources. Analyze the integration potential and impact on countries in the region (South America) that would enable a submarine cable between South America and Asia, with Chile as the gateway, in a detailed way and citing sources. Comparative analysis of international telecommunications development initiatives, with specific emphasis on successful submarine FO projects, including iconic examples in the field and how they could successfully be replicated in this case. Identify main market and investment challenges that could interfere with implementing and developing the project and how the fallout could be mitigated. A critical and purposeful discussion of the capacity of traditional traffic demand models to forecast relevant demand for this project. Analyze the key variables that could be considered in final choice of the route, considering legal, technical, and economic aspects. Conduct a detailed analysis of the industrial organization of the telecommunications market, with a particular focus on submarine FO. Deliver a PPP proposal for the project, with a good rationale for the aspects considered above.

Fair understanding: The understanding and diagnostic report displays one or more of the features listed below:

Vague description and/or failure to cite sources about the current state-of-the-art on matters pertaining to connectivity and submarine FO network infrastructure and implications for development in Chile. Scant analysis and/or failure to cite sources as to the integration potential and impact on countries in the region (South America) that would enable a submarine cable between South America and Asia, with Chile as the gateway. Vaguely analyzes a comparison of international telecommunications initiatives, or fails to emphasize submarine FO projects, does not consider iconic examples in the field or how they could be replicated in the case study. Lack of clarity in identifying the major market and investment challenges to the implementation and development of the project or only partially states how their fallout could be mitigated. Partial discussion of the capacity of traditional traffic demand models to forecast relevant demand for this project. Limited analysis of the key variables that could be considered in final choice of the route, considering legal, technical, and

economic aspects. Insufficient analysis of the industrial organization of the telecommunications market, with scant focus on submarine FO. Delivery of a PPP proposal with a weak rationale.

Weak understanding: The understanding and diagnostic report displays one or more of the features listed below:

Failure to analyze, contextualize, or describe the current state-of-the-art on matters pertaining to connectivity and submarine FO network infrastructure and implications for development in Chile. No sources cited. Failure to analyze the integration potential and impact on countries in the region (South America) that would enable a submarine cable between South America and Asia, with Chile as the gateway, in a detailed way and citing sources. Failure to provide a comparative analysis of international telecommunications development initiatives. No emphasis placed on successful submarine FO projects or iconic examples in the field. No mention of how they could be successfully replicated in this case. Failure to identify the major market and investment challenges to the implementation and development of the project and how their fallout could be mitigated. Shallow analysis of demand. Failure to analyze the key variables that could be considered in final choice of the route, considering legal, technical, and economic aspects. Failure to conduct a detailed analysis of the industrial organization of the telecommunications market, with a particular focus on submarine FO. Does not deliver PPP proposal or the proposal lacks a rationale.

Whichever offer earns the highest score on the evaluation of the aforementioned criteria, and is deemed to be the bidder in the interest of the Service, shall be awarded this tender.

If there is a tie in the score, it shall be resolved by comparing the scores earned by each bidder on each evaluation criterion, in the following order of priority:

- 1st Criterion No. 6
- 2nd Criterion No. 3
- 3rd Criterion No. 2
- 4th Criterion No. 4
- 5th Criterion No. 5
- 6th Criterion No. 1

The tie shall be broken using each of the evaluation criteria, checking the scores pursuant to the above order, whenever there is a difference in the score earned by the bidders. The tender shall be awarded to whichever bidder earned a higher score on the respective criterion, and there shall be no need to proceed to compare the subsequent evaluation criteria.

Article 12 AWARDING

The Undersecretariat of Telecommunications shall publish the results of this tender on the website <http://www.subtel.gob.cl/digitalgateway>.

The Undersecretariat shall declare any offer that does not comply with the requirements set forth in these Bidding Specifications as inadmissible and shall declare the tender void if no bids are submitted, or, if the bids that were submitted turned out not to meet the interests of the Service.

The Undersecretariat shall award the tender via a resolution with cause. Any non-selected bidders shall not be entitled to any indemnity of any sort or nature.

Re-awarding:

A re-award shall come into play if the winner is deemed ineligible under the terms of Article 7 of these Bidding Specifications at the time the contract is signed. If the winner is a consortium and one of the members is affected by the aforementioned ineligibility, they must inform in writing if they withdraw or decide to likewise enter the winning contract with the rest of the members, as long as they are eligible. If they fail to inform that or state their intention to withdraw, then the award will be offered instead to the next best evaluated bidder.

If one of the consortium members withdraws, the consortium must continue to operate with at least two members. If the group does not meet the minimum stated above, or the member that withdraws is one of the members that met one or more of the requirements subject to the evaluation of the offer, then the offer shall be nullified, and the tender shall be re-awarded to the next best evaluated bidder.

If the winner withdraws from its offer, the Undersecretariat shall be entitled to re-award the tender to the bidder whose offer came next in the scoring or may declare the tender void.

Article 13 CONTRACT

The Undersecretariat and the winner shall enter into a contract within forty (40) calendar days starting from the notification of the award. If the contract is to be formalized with a consortium, the contract shall be signed with the representatives designated by the members in the instrument formalizing it or attached to the respective offer or subsequently enclosed if the former was not yet a publicly authenticated document. If, for any reason, the consortium were to proceed to designate a new representative in a later action, this amendment shall be immediately communicated to this Undersecretariat, enclosing a copy of the respective action, and it shall be the new power of attorney who appears on

behalf of the consortium, whether to sign the contract or during its execution, whichever the case may be.

With the contract signed by the winner, it shall be the duty of the Undersecretary to sign the contract on behalf of the Undersecretariat.

After the contract has been signed by the parties, the next step is to draw up the administrative proceeding that formally approves it.

Bear in mind that if the winner fails to sign the contract within the timeframe mentioned, it will be considered as withdrawn from the offer.

Article 14 CONTRACT AMOUNTS AND VALIDITY

a) Maximum available budget

The maximum available budget for this contract amounts to USD3,000,000 (three million United States dollars), tax included, distributed into two payments of: USD\$750,000.- (seven hundred fifty thousand United States dollars) for the year 2019 and one of USD1,500,000- (one million five hundred thousand United States dollars) for the year 2020.

b) Contract Period:

The contract shall take effect after the administrative proceeding approving it has been fully finalized and shall remain valid and in effect until final acceptance pursuant to the Final Report.

Notwithstanding the foregoing, if the contract is still pending, for good service reasons, provision may begin before the administrative proceeding approving the contract is fully finalized, with payment subject to it being fully finalized.

Services requested as part of this contract shall be executed fully within the contract validity period and in no case shall occur fourteen (14) months following the start of the provision of services.

The service shall be considered complete once the jobs commissioned as part of the final report are approved to the full satisfaction of the Contract Technical Counterpart and the paying entity.

Article 15 CONTRACT PERFORMANCE BOND

When entering into the contract, the winner shall provide a guarantee bond for purposes of the faithful, full, and timely performance of the contract, payable on demand, irrevocable, and granted via an instrument that ensures it can be drawn on quickly and effectively, like a stand-by letter of credit, a bank

guarantee bond, a collateral certificate payable on demand, an on-demand deposit or check payable on demand, made out to the Corporación Andina de Fomento (CAF), for an amount equivalent to 10% of the total awarded value, which should be expressed in United States dollars, with a validity period equal to sixty (60) days following the contract termination date. The bond shall state the following: “To guarantee the faithful performance of the contract titled: Economic, Technical, and Legal Feasibility Study for the Submarine Cable Project: “Asia-South America Gateway,” or similar and shall be issued by a commercial bank whose headquarters or branch is in the Metropolitan Region or a foreign commercial bank branch with offices in the city of Santiago, Metropolitan Region, Chile.

This bond shall ensure fulfillment of each and every obligation to which the consultant is bound in the contract and shall moreover ensure payment of the employment and social security obligations for employees working on the contract, and may be called upon, in case of non-compliance, unilaterally, via an administrative decision and with no need for judicial or arbitration action, via the issuing of the appropriate resolution with cause.

The bond shall be sent electronically to the e-mail addresses digitalgateway@subtel.gob.cl and crueda@caf.com.

Bear in mind that breach of contract may also include imperfect fulfillment or late fulfillment of the consultant’s obligations.

The foregoing is notwithstanding any actions the Undersecretariat may file to demand forced fulfillment of the agreement or the resolution of the contract, which in both cases would go along with appropriate indemnity for damages.

If the drawing on this Performance Bond does not mean contract termination, the consultant shall replace it for one of equal amount and validity period within ten (10) calendar days starting from the date the guarantee is charged, under sanction of contract termination.

The performance Bond submitted by the contracted party shall be returned to it once it expires.

The consultant shall be liable for carrying out any required proceedings to deliver the performance bond for the contract described in this article on time and properly.

Article 16 TECHNICAL COUNTERPART

The Undersecretariat’s Technical Counterpart for the provision of the service shall consist of three (3) Undersecretariat of Telecommunications officials.

This Technical Counterpart shall evaluate all partial and final products delivered during contract execution, clarifying and offering guidance as activities progress, approving or rejecting changes in the professional Team designated to fulfill contract obligations, and receiving and accepting each of the deliverables from the consultant, performing any other task that these Bidding Specifications require of it, and, in case of delays in the submission of services or products contracted, shall rule on the relevance of the act invoked as an exemptor of liability, if alleged.

Article 17 REPORTS APPROVAL PROCEDURE

Reports shall be delivered on the dates outlined in Article 18, letter a) of these Bidding Specifications. The Technical Counterpart shall have **fifteen (15) calendar days** to review it.

After the Technical Counterpart reviews it, the following situations may occur:

Report is Approved. The Technical Counterpart on the contract shall send, in writing, approval of the report associated with the work plan.

Report with Observations. The hired party shall have **ten (10) calendar days** to correct the points observed. An observation shall be understood to refer to any comment from the Technical Counterpart pertaining to failure to meet the objectives, tasks, or activities specified in these Bidding Specifications, work orders, or the contract, which, in its judgment, makes it impossible to approve the report.

If the forgoing occurs, the following situations may arise:

1. The hired party delivers the corrections within the required deadlines and they are approved by the Technical Counterpart, in which case it shall send, in writing, approval of the Report and the date of receipt foreseen for the next one.
2. The hired party delivers the corrections within the required deadlines, but the Technical Counterpart deems that they still do not fulfill the requirements. In this case, new observations shall be sent back to the hired party to do another round of corrections, in writing, with up to **five (5) calendar days** to make the corrections.

This process may be repeated up to a maximum of two (2) times. If the same report receives observations from the Technical Counterpart for a third time, the fine stipulated in Article 18, letter b), “Payments and Fines,” of these Bidding Specifications shall apply.

Article 18 PAYMENTS AND FINES

a) Payment method

The full value set by the consultant in its economic offer shall be paid in three (3) installments after the respective jobs have been executed and approved by the Undersecretariat’s Technical Counterpart.

Pursuant to Clause VI of the Technical Cooperation Execution Agreement stated in Article 1 of these Bidding Specifications, these values shall be paid by the CAF directly to the awardee, on request of the Undersecretariat, as long as the following requirements are met:

1. The administrative proceeding approving the respective contract has been fully completed;
2. The Undersecretariat’s Technical Counterpart informs the CAF as to acceptance of each of the deliverables submitted by the consultant;
3. The Technical Cooperation Execution Agreement between the CAF and the Undersecretariat is in effect.

The consultant shall be the sole party liable for paying salaries, social security contributions, and non-tax contributions, and compensation to its employees, as well as all other payments required by law, or any other payment owed to its consultants or advisors. As a result, the contract shall hold CAF and the Undersecretariat free of liability for any claim filed by its employees, subcontractors, or consultants.

The maximum execution timeline for the contract shall be **fourteen (14) months** starting from the date the Resolution approving the contract is fully processed, considering the provisions of Article 17 of this document.

The payment method shall be three (3) installments, after the deliverables listed below are executed and approved:

Reports to submit*	Payment percentage	<u>Maximum</u> deadline
Report No. 1	25%	November 4, 2019
Report No. 2	25%	December 27, 2019
Final Report	50%	June 24, 2020

() The content of the reports is detailed in Chapter V of the Technical Specifications.*

If a consortium is hired, the payment shall be made to the member or representative designated to receive payment in the incorporation document, pursuant to the provisions of Article 9 of the Administrative Specifications.

b) Fines or sanctions

The Undersecretariat may administer the following breach of contract fines:

Breach	Fine
Delay in delivery of the Progress Reports for reasons not attributable to the Undersecretariat.	US\$1,000 for every business day late with a ceiling of 12 business days.
Delay in delivery of the Final Report for reasons not attributable to the Undersecretary.	US\$2,000 for every business day late with a ceiling of 12 business days.

Note: A full day shall be any partial day more than six (6) hours.

Fines applied shall be made effective administratively, with no need for trial, and can be deducted from pending payment. Nevertheless, before deducting the amount, the Undersecretariat of Telecommunications shall communicate to the hired party and the CAF that the fine is being applied, its rationale, and shall then request the appropriate deduction. This deduction shall not affect the tax payable or withholdable, if applicable.

In the cases described above, the proceeding shall be in accordance with the provisions of Article 20 of these Administrative Specifications.

Article 19 AMENDMENT AND EARLY TERMINATION OF THE CONTRACT

The Undersecretariat shall be entitled to declare administratively an early termination of the contract, with the individual or entity hired having no right to indemnity whatsoever, if any of the following causes should occur:

1. Mutual termination or agreement among the parties.
2. Severe or reiterated breach, duly documented, of the obligations entered into by the hired party. Severe breach may be any of the following situations:
 - a. The fines accumulated in delay of delivery of the reports or products agreed and/or deficient quality of the same exceeding 25% of the total contract price.

- b. Failure to adhere to the confidentiality duty during the validity of the contract, pursuant to the terms of Article 24, letter a) “Information Confidentiality,” of these Bidding Specifications.
- c. In case of abandonment of the execution of the agreed services. Abandonment shall be considered a delay in the delivery of a service or product for a time period exceeding twelve (12) business days, counting from the deadline for delivery.
- d. If documented by the Undersecretariat that the hired party committed plagiarism, or copied or reproduced publications, research product, or academic work without authorization.
- e. If total or partial transfer to third parties of the rights and obligations emanating from the contract entered into by the parties occurs.

Notwithstanding the foregoing, the Bidding Specifications of this tender may establish other circumstances that could entail a severe breach of the essential obligations to which the consultant is bound.

3. If the consultant enters into severe insolvency, unless the guarantees submitted are improved or the existing guarantees are enough to guarantee fulfillment of the agreement.
4. If the consultant is a consortium:
 - a. The formation of the members constituted an objective of violating free competition. If such circumstance is verified, the pertinent records shall be sent to the National Economic Prosecutor’s Office.
 - b. If any of the members withdraws from the consortium, and that member met one or more of the characteristics subject to evaluation in the offer.
 - c. If it emerges that the consortium concealed any information relevant to performing the contract that would affect any of its members.
 - d. Ineligibility or withdrawal of any of the members, to the extent that the consortium cannot continue executing the contract with the remaining members, under the terms of the award.
5. If the contracted entity dissolves.
6. For reasons of public interest or national security.

7. If the CAF decides to terminate the Technical Cooperation Execution Agreement signed with the Undersecretariat early.

In case of early termination, the consultant shall fully meet the services required until notification of the aforementioned early termination.

In all the cases described above, no indemnity shall apply whatsoever for the consultant.

If the contract undergoes any amendment, it needs to be approved by a fully processed administrative proceeding. Any amendment shall meet the terms of the principle of strict adherence to the Bidding Specifications and shall not affect the equal treatment of the bidders.

Article 20 PROCEDURE TO APPLY MEASURES IN CASE OF BREACH OF CONTRACT

Should the consultant commit any of the behaviors which under the terms of this tender entail applying one or more of the measures, such as a fine, drawing on the bond for the faithful, full, and timely performance of the contract, and/or early anticipation of the contract, the Technical Counterpart for the Undersecretariat shall notify in writing the breach behavior to the consultant, stating the cause and applicable measure. Notification shall be made within five (5) business days following the breach, by e-mail, to the address the consultant informed as of the date of entering into the contract.

The consultant shall be entitled, in writing, to challenge the application of the measure applied by the Undersecretariat within five (5) business days counting from the date of its notification, and shall provide all documentation justifying this choice in the submission. The Undersecretariat shall rule on the claim filed, either accepting or rejecting the justification provided by the consultant. The ruling on the application of the measure shall be personally notified to the consultant.

If during the execution of the consultant force majeure or fortuitous events were to occur that slow down or lead to delays in the delivery of the works or services, the consultant shall communicate such circumstance in writing to the Undersecretariat as soon as it becomes aware of it, enclosing all necessary documentation to demonstrate the alleged circumstances, and requesting an extension of the respective deadline. The Undersecretariat's Technical Counterpart shall rule on the relevance of the alleged fact as an exemptor of liability within a term of 5 business days. If it does exempt them, the measure that would have applied shall not apply to the consultant. If the allegation posed by the consultant is ruled inadmissible, the Technical Counterpart shall issue a ruling listing the reasons considered for the rejection and shall propose to the Senior Service Director the application of the appropriate measure pursuant to

the provisions of these Bidding Specifications. The resolution with cause applying the measure shall be personally notified to the consultant.

Article 21 INTEGRITY PACT

The bidder declares that by the mere fact of participating in this tender, it expressly accepts the integrity pact, and shall fulfill each and every one of the stipulations contained therein, notwithstanding the rest mentioned in these Bidding Specifications and the rest of the integral documents.

Specifically, the bidder agrees to provide all information and documentation considered necessary and required pursuant to these tender Bidding Specifications, expressly pledging the following:

1. The bidder pledges to respect the fundamental rights of workers, understood as those consecrated in the Political Constitution of the Republic in Article 19, numbers 1, 4, 5, 6, 12, and 16, pursuant to Article 485 of the Labor Code. Likewise, the bidder pledges to respect human rights, which means it shall avoid giving rise to or contributing to adverse effects on human rights through its activities, products, or services, and shall rectify any impact that does result, in accordance with the United Nations Guiding Principles for Human Rights and Companies.
2. The bidder shall neither offer nor cede, nor try to offer or cede, bribes, gifts, awards, exchanges, or payments, whatever their type, nature, and/or amount may be, to any public official related to the offer, the public tender process, or the execution of the same or the contracts eventually resulting from it. Nor shall it offer or cede them to third parties that could directly or indirectly influence the tender process, decision-making, or subsequent award and execution of the contracts derived from it.
3. The bidder agrees to not try to make or make agreements or engage in negotiations, acts, or behaviors that are designed to influence or affect in any way free competition, regardless of the specific act or behavior, and especially, any agreements, negotiations, acts, or behaviors that related to collusion, in any of its forms.
4. The bidder shall review and check all information and documentation that it must submit as part of this tender process, taking all measures necessary to ensure the veracity, integrity, legality, consistency, precision, and currency of the same.
5. The bidder shall adjust its behavior and fulfill the principles of legality, ethics, morals, good customs, and transparency in this tender process.

6. The bidder states, guarantees, and accepts that it is familiar with and shall respect the rules and conditions outlined in these Bidding Specifications, its integral documents, and the contract or contracts that derive from it.
7. The bidder pledges and accepts all consequences and sanctions foreseen in these Bidding Specifications, as well as in the laws and regulations applicable to it.
8. The bidder recognizes and declares that the offer submitted in the tender process is a serious proposal, with accurate information, whose technical and economic terms reflect reality, which ensures the chance of complying with it under the conditions and timing offered.
9. The bidder pledges to undertake any measure necessary so that the aforementioned obligations are assumed and fully adhered to by its employees and/or dependents and/or advisors and/or agents, and, in general, anyone with which it or they directly or indirectly related as part of or as an outcome of this tender, including subcontractors, and shall be fully liable for the consequences of their breaches, notwithstanding the individual liabilities that may apply and/or may be determined by the appropriate agencies.

Article 22 APPLICABLE LEGISLATION

The contract entered into between the consultant and the Undersecretariat shall be executed and interpreted pursuant to the laws of the Republic of Chile, notwithstanding the terms of the article below.

Accordingly, any provision that may turn out to run contrary to Chilean legal regulations shall not be opposable by the parties.

Article 23 INTERPRETATION AND INFORMATION

These Administrative Specifications, the Technical Specifications, and the respective contract shall be interpreted in harmony, such that there is a match among all of them. All documents pertaining to the tender shall be interpreted always in the sense of the most perfect development and execution of the proposal, in accordance with the applicable rules of science and technical rules, pursuant to the specific case in question. Should there be any discrepancy in the interpretation of the foregoing, the provisions of the Technical and Administrative Provisions and their Appendices shall prevail over the terms set in the offer by the hired party.

Any error or omission by the bidders or winner in obtaining the information and studying the documents pertaining to the tender process shall not exempt them

from the liability of appropriately estimating the costs needed to develop and devise the proposal or render the service. Accordingly, any costs incurred by reason of failing, error, lack of care, or omission resulting from their analysis and interpretation of the available or obtained information shall be at their own charge.

Article 24 STANDARDS OF WORK

All activities to be performed by the consultant shall be pursuant to the following standards:

a) Information Confidentiality:

The consultant shall guarantee confidentiality in the handling of the information related to the advising. All reports and documents generated, data collected, and models developed and/or updated during the performance of the commissioned tasks, as well as their results, shall be the property of the Undersecretariat, and the consultant shall not be entitled to make them public, or share their opinions about them, or use them for other purposes without the express authorization of this Undersecretariat. Otherwise, the Secretariat reserves the right to undertake the appropriate judicial actions.

In those cases, the Undersecretariat may call on the Faithful and Timely Performance Bond for the Contract, due to violation of Law No. 19.628.

In order to fulfill the aforementioned, the supplier:

1. Shall limit delivery or disclosure of all information provided by the Undersecretariat with relation to the execution of the contracted services solely to those officials, employees, or suppliers of services who strictly need to know it in order to perform their job or task.
2. Shall include in the service provision or employment contracts for all officials, employees, or service suppliers who have or may have access to this information the prohibition and absolute non-possibility to transmit it, disclose it, transfer it, and/or copy it totally or partially.
3. Shall include in the service provision or employment contracts for all officials, employees, or service suppliers who have or may have access to this information the requirement to fulfill the duty of confidentiality and reserve imposed by this hiring, adopting all preventive measures needed to avoid third parties from gaining access to the aforementioned information.
4. Shall undertake all security measures needed to prevent theft of the information or access to it via unauthorized third parties.

5. Shall instruct all staff about how to comply with the obligation to advocate for protection of personal data and information security for anyone who has or could have access as part of the contract, with special emphasis on any information request received personally or as part of the company as governed by Law No. 19.628.

If the consultant violates the confidentiality obligation described in the paragraph above, it shall be understood that this situation entails a severe breach of the essential obligations the contract imposes on the consultant, for which reasons the Undersecretariat may terminate it early, by virtue of the provisions of Article 19, numeral 2, of these Administrative Specifications.

Finally, let it be known that the Undersecretariat of Telecommunications is governed by the principle of transparency in the exercise of public functions under the terms of the Law No. 20.285 of the Republic of Chile, as well as the standards contained in the Law No. 19.628, so the information mentioned in this hiring and/or the people rendering the services and/or the people whose information and data are part of the records or databases to which there is access, shall rule pursuant to the rules contained in both legal texts.

b) Changes made to the originally-defined work Team:

If the consultant wants to make changes in the professional Team (Project Manager and consultants) designated to perform the obligations in the contract, it shall inform, justify, and ask for approval of the changes from the Undersecretariat's Technical Counterpart, at least one week in advance. The consultant shall identify with the respective resumes the professionals proposed who shall have at least equal or better experience in the fields required and salient as established in Chapter II of these Technical Specifications. The Undersecretariat's Technical Counterpart shall approve or reject the request, within five (5) business days after receiving it.

If the consultant violates the obligation to obtain authorization from the Undersecretariat's Technical Counterpart in order to make changes to the work Team, as described in the paragraph above, it shall be understood that this situation entails a severe breach of the essential obligations the contract imposes on the consultant, for which reasons the Undersecretariat may terminate it early, by virtue of the provisions of Article 19, numeral 2, of these Administrative Specifications.

c) Subcontracting:

To perform the specific activities in the study, the winner shall be entitled to partially subcontract another company or expert professionals, **as long as this is clearly stated in its offer**, notwithstanding that the liability for performance of the contract shall remain with the winning consultant.

The consultant shall submit, within the ten (10) business days following the notification of the award resolution, the information listed in Article 9 of these Administrative Specifications, about the subcontractor(s) it intends to use, and the affidavits therefore required, in the forms enclosed in Appendices No. 4 or No. 5, as applicable, of these Bidding Specifications.

The consultant shall likewise enclose an affidavit from the subcontractor, signed by the subcontractor if it is an individual or by the legal representative if it is an entity, affirming that: (i) they are not tied to any activity in violation of: (a) any local standard of any country, or any regional, supra-national, or community standard pertaining to asset laundering and prevention of financing to terrorism; and/or (b) any principle, recommendation, or provision issued by the United Nations Organization, and/or any other body dedicated to fighting asset laundering and the prevention of financing to terrorism; and/or (ii) on any of the blacklists made for cause or due to the violation of any of the standards, principles, and/or recommendations listed in the foregoing numeral (i); and/or (iii) at the sole criterion of CAF, fails to meet the applicable internal CAF requirements and regulations pertaining to the asset laundering and terrorism financing prevention policy; and/or (iv) shall not be engaged in, directly or indirectly, two service contracts financed by CAF resources at the same time, without the express written consent of the CAF; and/or (v) none of the members of the consulting firm(s) shall belong, directly or indirectly, to the permanent or temporary staff of the Executor, or have belonged to the staff within the twelve (12) months prior to the date of the submission of the offer, and shall use for this purpose the form attached to Appendix No. 3 of these Bidding Specifications. The same rule shall apply to anyone who has been on the CAF staff.

If the subcontractor is an expert professional, meaning an individual, also enclose that person's resume. If an entity, enclose the resume of the subcontractor and the resume of all of the professionals who will be assigned to perform the job, including, moreover, documentation that shows they have performed jobs similar to those commissioned of the winner.

On another note, if during the provision of the services the winning consultant needs to make subcontracting other than that which was originally listed in the offer, it shall request advance authorization from the Undersecretariat's Technical Counterpart, and shall enclose therein all documentation listed in the preceding paragraphs.

If the consultant violates this, it shall be understood that this situation entails a severe breach of the essential obligations the contract imposes on the consultant, for which reasons the Undersecretariat may terminate it early, by virtue of the provisions of Article 19, numeral 2, of these Bidding Specifications.

d) Coordination:

During contract execution, the Undersecretariat's Technical Counterpart shall be entitled to ask the consultant to deliver progress status reports, which it shall evaluate. The Technical Counterpart may provide any feedback or comments it deems relevant, to which the bidder shall be required to evaluate how to incorporate them into the work, in coordination with the Technical Counterpart, pursuant to the procedure outlined in Article 17 of these Bidding Specifications.

e) Transfer and Delivery of Information

The reports generated by the consultant shall be delivered to the Undersecretariat by e-mail in electronic PDF format And .doc files, no later than the deadlines stated for this purpose in Article 18, letter a) of these Bidding Specifications.

Where the Final Results Report is concerned, it shall also be submitted in a paper copy with physical submission to the Reception Desk of the Undersecretariat, after it has been approved by the Technical Counterpart of the Undersecretariat, pursuant to the procedure stated in the section above.

Notwithstanding the foregoing, the Undersecretariat reserves the right to request any document it needs, in printed copy in a binder, with a maximum of two copies for document, and/or on optical/digital media format.

f) Prohibition on Transferring the Contract

The hired party shall not be entitled to cede or transfer the contract in anyway, whether partial or full, or the rights or obligations born of this tender and the final contract signed, unless there is a special legal standard permitting the aforementioned transfers.

The forgoing is notwithstanding the documents justifying the credits that emanate from these contracts that can be transferred pursuant to common law rules.

Any breach of this obligation shall lead to immediate termination of the contract, and a draw on the performance bonds.

g) Changes to the activities defined:

During the effective period of the contract, the Undersecretary shall be entitled to amend or eliminate activities or products when doing so is strictly necessary to develop the service and scope of the expected results.

h) Amending deadlines:



The Undersecretary shall be entitled to modify the dates stipulated for delivering the products as long as it is strictly necessary for the scope of the expected results, with prior agreement with the consultant.

II. TECHNICAL SPECIFICATIONS

The technical offer shall fulfill the following conditions:

Chapter I. Contents of the Technical Offer

1 Experience of the participating individual and/or juridical person or of the members of the consortium, as applicable

The bidder shall include the resume of the participating individual or juridical person. According to the criteria for the evaluation, the resume, at least, shall detail proven experience on projects, consulting and/or advisory services provided on matters related to the service that have been bid on in the last ten (10) calendar years. Appendix No. 8 entitled "*Experience of the bidder (individual or juridical person) in the execution of projects with similar characteristics*" shall be filled out and signed.

2 Certificates of consulting services carried out or underway, or if not, a copy of the contracts

3 Resumes of all the professionals who will be assigned to execute the tasks that are the subject of the service to be contracted

The bidder shall include the resumes of all the professionals that will participate in the development of the project, including the project head, and are specified in chapter II of these Technical Specifications. Each resume shall be attached in a format that is easy to read.

For purposes of facilitating the review and understanding of this information, the bidder shall use the format contained in Appendix No. 7 of these Bidding Specifications, which must be filled out completely.

4 Copy of the professional diploma of the Project Leader.

5 Members of the technical Team.

6 Copy of the professional diploma of every member of the technical Team.

7 Introductory Report on the subject of this bidding

The bidder shall prepare a brief report that shows its degree of knowledge of the subject of this study, particularly to distinguish the key points necessary to carry out the project successfully like the impact it has on the development of the region, associated with a thorough analysis of the environment of the countries involved and the development of the technological market and the convergence of new technologies. The scope of the legal instruments available in the current law will also be relevant.

As will the effects on the industry associated with the introduction of projected legal modifications. This report shall be no less than 5,000 words in length nor more than 12,500 words (single space, size 11 Arial font, and letter-size paper). Graphs, appendices, tables, etc. shall not be considered part of the length. The subjects to be developed are the following:

- a) Analysis, contextualization, and description of current policies on connectivity and infrastructure of high-speed networks and their implications for the development of the region (South America).
- b) Analysis of industrial organization of the telecommunications market, particularly submarine fiber optic , indicating the most conceivable initiatives at present and in the next few years with a focus on markets that are to the project.
- c) Analysis of the potential for integration in the region (South America) and development that opens up as a result of the connectivity with Asia via submarine cable. Extend the analysis and explain the impact on the countries that will be the landing points for the cable. Besides a conceptual development, examples of real or potential cases shall be delivered.
- d) Critical and constructive discussion about the capacity of the traditional models of traffic demand to project relevant demand for the project. An example shall be given of real cases of “out of the box” studies of demand on similar projects.
- e) Analysis of key aspects (technical, legal, and economic) that shall be studied, evaluated, and considered for the success of the project and for the final choice of a route for a submarine optic fiber cable, quoting sources with data and information that shall be processed. The consultant may define the relevance and include aspects such as: business models (i.e. open access, neutral strategies, commercial strategies, hub), network architecture, and other technical aspects, operational aspects, and commercial relations, remuneration strategies, players involved, governance models, operational and corporate models, potential service offer, etc.
- f) A PPP proposal for the project considering the consultant’s knowledge of the submarine fiber optic market, possible parties interested in investing (in the consultant’s opinion), and the role they will play in the project. Relevant examples of real cases involving the use of PPP for the implementation of submarine fiber shall be included.

8 Description of the work to be done and its methodology

The bidder shall attach a report that contains a description of all the activities and suppositions to obtain the required estimates; a list of activities to be developed and of the project to be delivered to the Undersecretary; a description of the work methodology to be used; an explanation of how the proposed work methodology addresses the whole scope of the study and fulfills the general and specific objectives set forth in these Bidding Specifications.

In the case of demand, for example, the bidder shall propose a method to research demand in the horizon of the project that includes the use of sources of available information and the definition of suppositions in those areas where information is not available: the preparation of suppositions based on expert opinion; the identification of variables and the way of measuring them, and the well-founded establishment of methods to analyze and calculate the estimation of financial flows. A description of this kind is also expected for the other aspects of the report.

Finally, the bidder shall define and structure the work to be done in order to:

- a) Analyze completely and succinctly all the different scopes - economic, regional integration (in South America), technical, juridical, and regulatory- conformation of a model of PPP and financing of the project.
- b) Develop each one of the activities stated in these Technical Specifications.
- c) Define well-founded suppositions in those areas where information is not available. The bidder shall give examples of the application of the proposed methodology in order to clarify how the expected result will be achieved.

9 Work Plan

The bidder shall present a work plan (Gantt Chart) that includes at least deadlines and a detailed timeline to develop the activities it has been entrusted with and a clear identification of the professionals that will work on every activity of the service to be provided.

The deadline for delivery of the product (Final Report) may not be later than the date stated in the Technical Specifications.

Note: The mere circumstance of presenting an offer for this bidding process implies that the bidders have analyzed the respective administrative and technical specifications, clarifications, and responses formulated before the presentation of their offer and expresses their accordance and acceptance,

without any kind of reservation or conditions, of all the documentation in reference, and they may not modify the Conditions with their offer.

Chapter II. Characteristics of the bidder's work Team

The personnel that are assigned to develop the works shall be composed mainly of professionals with experience in studies of demand analysis, traffic projections, regulatory frameworks, public-private alliances, submarine fiber optic engineering, industrial organization, business strategies, and everything that is relevant to carry out this study.

The work Team assigned to the tasks shall be composed of the Project Leader and at least the following professionals for each one of the 3 reports or stages of the study:

Report No. 1:

Professional	Demand 1 (demand from companies and independent demand)	Demand 2 (Data centers and new technologies, traffic and backup)	Technical	Governance
Telecommunications or data networks	1	1	3	1
Commercial or businesses	3	2	-	1
Economics or Finance	1	1	-	1
Legal or regulatory	-	-	-	2

Report No. 2:

Professional		Supply	Technical	Governance
Telecommunications or data networks	-	1	3	1
Commercial or businesses	-	2	-	1
Economics or Finance	-	1	-	1
Legal or regulatory	-	-	-	2

Final Report:

Professional			Technical	Governance
Telecommunications or data networks	-	-	3	1
Commercial or businesses	-	-	-	1
Economics or Finance	-	-	-	1

Legal or regulatory	-	-	-	2
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The consultant may modify the distribution of professionals, maintaining the minimum number of them and respecting the deadlines and contents of each report.

The profiles of the Team are the following:

- a) Project Leader, professional in the areas of economics, finance, business or engineering, with at least 10 years of experience on projects involving submarine fiber optic networks, with a minimum of 5 years in management positions on projects.
- b) Professional with a specialty in economics or finance, with at least 5 years of experience in analysis and projections of demand, markets, and traffic. Knowledge of pricing mechanisms for service of submarine fiber optic networks. The Team shall have at least 1 professional with this specialty with 10 years of experience or more on submarine cable projects.
- c) Professional with specialty in the legal and regulatory area, with at least 5 years of experience in telecommunications/information technologies, preferably on matters that promote policies of competitiveness and development of the industry. Experience in regulatory analyses of transnational submarine cables and models of public-private alliances is desirable. The Team shall have at least 1 professional with this specialty with 10 years of experience or more in submarine cable projects.
- d) Engineer specialized in telecommunications or data networks, with at least 5 years of experience in engineering of submarine fiber optic networks (architecture, design, installation, acceptance testing, operations) and knowledge of suppliers, builders, installers in the submarine fiber optic industry. The Team shall have at least 1 professional with this specialty with 10 years of experience or more on submarine cable projects.
- e) Professional specialized in the commercial or business area in the telecommunications/information technologies sector, with at least 5 years of experience in development of business models for transnational submarine cables that include public-private alliance, consortia or others and knowledge of policies and strategies to attract investment and integrate views with industry, government, and investors. The Team shall have at least 2 professionals with this specialty with 10 years of experience or more in submarine cable projects.

The bidder shall specify the name of the professional who will act as Project Leader during the execution of the works and shall be reachable at all times by the Undersecretariat. Also, the professional shall be available to attend meetings in person or via videoconference, which shall be scheduled by mutual agreement with the Technical Counterpart of the Undersecretary and shall be carried out at least once a week.

In order to carry out specific activities of the consultancy, the consultant may subcontract another company or specialized professionals, provided that is clearly indicated in its offer. In the case of a juridical person, its resume and the resumes of all the professionals who will be assigned to the execution of the works shall be attached to the offer, and the latter shall have an equal or higher level of experience to the level required in the first paragraph of this chapter. The prohibition set forth in paragraph second thereof shall be applicable to the bidder and the professionals. In the case of specialized professionals, in other words individuals, the resume of the person on the professional Team assigned to carry out the tasks shall be included, which is part of the Technical Specifications.

Chapter III. Preliminary definitions

For purposes of these Technical Specifications, the following definitions and acronyms are listed:

BMH: (Beach Man Hole) Chamber that contains the connection between the submarine fiber optic cable and the land fiber optic cable.

BU: (Branching Unit) Branching equipment of the submarine cable towards other Terminal Stations.

CAGR: (Compound Annual Growth Rate) compound annual growth rate is the average geometric variation of a numerical series between two periods.

Capacities: Understood to be the telecommunications infrastructure capacities that are related to: interconnection, transportation, access to national and international Internet.

CDN: (Content delivery network) Storage center for digital data or data centers that are connected to Internet.

Cloud computing: Also known as “service in the cloud,” which consists of providing services through connectivity to internet and mainly consist of storage, processing or applications.

Disruptive demand: non-traditional demand projections, in other words, all those projections of data traffic that consider technologies and markets

that do not generate large volumes of data traffic yet, but could generate it in the future.

Devices: This refers to any piece of equipment that is connected to Internet by any technology. The devices include, among others: desktop computers, smart phones, tablets, videogame consoles, smart TV's, security cameras, Internet sensors of any kind, etc.

Dry Plant: All the equipment that is installed from the BMH to a Node or IXP, inclusive, on land.

FO: Fiber optic

International Connectivity: Network and data transport service from a node located in Chile, near, but not necessarily on the territorial border, to the content server on Internet generally located in the northern hemisphere of the planet.

IoT: (Internet of Things) This corresponds to the connection of devices of all kinds to internet, which permits their interconnection and exchange of information for a specific application.

IRU: (Indefeasible Right of Use) This identifies the contractual right to the use of a data transport network, usually in long-term conditions and transferrable to third parties.

IXP: (Internet Exchange Point) Point where different networks are connected to exchange data traffic by means of a common infrastructure. Normally IXP's make decisions on traffic routing to national or international networks.

Markets of interest: A market, country or sector with potential for demand and traffic that is part of the study in order to analyze its inclusion and impact on the project.

Model Companies: Companies that may be in any region on the planet that make it possible to detect and project large volumes of data traffic that are not visible in historical series of aggregate demand. They will be used as benchmarks, because of the level of data traffic they generate, to compare them with other companies in the same industry.

Node: Physical place set up for the connection of data networks of the same or different operators, usually at a local center of a telecommunications company, a center of IP traffic management, an interconnection point or a terminal box. A node may or may not have the functionality of exchanging or routing data traffic.

Public Private Partnership (PPP): The different forms of public private associations, in general terms, imply a long-term cooperation, regulated by contract, between the public authorities and the private sector to carry out public projects where the resources required are managed jointly and the risks related to the project are distributed appropriately on the basis of the risk management capacity of the partners in the project.

RFP: (request for bid) Bidding process where a supplier is requested to deliver a good or service.

SLA: (Service level agreement) Agreement to provide service between a supplier and customers in such aspects as scope, quality, and responsibilities.

Terminal Station: Station located close to the landing point where line terminal, power and other submarine system's equipment are hosted.

Traffic or Transport: Flow of data that circulates through the transport network upstream or downstream of a third operator, under a commercial service agreement.

Speed: Refers to the broadband speed defined as the transmission rate of bits by unit of time, understanding Mbps (Mega bits per second), Gbps (Giga bits per second), etc. as measurement units.

Wet Plant: All the equipment that is installed between two BMH's, undersea.

Chapter IV. Scopes in economic technical matters of the consultancy

To fulfill the general objective and develop the activities correctly, the consultant is expected to execute a study that includes at least the following scopes:

1 Evaluate alternative routes

To achieve one of the main objectives of the study, finding the best investment option for a submarine FO route between South America and Asia, different routes should be evaluated, making an abstraction of the definitive route. Therefore, this study should provide information to make a well-founded decision about the route and termination point in Asia, in other words, the ocean route and end point are a consequence and recommendation of the study and by no means an early conclusion.

The economic technical scopes that are indicated are without detriment to the recommendations expressed by the consultant to the Technical Counterpart of the Undersecretariat.

2 Self-funded research costs

The costs associated with obtaining the necessary information to develop this study are the consultant's responsibility. The foregoing includes the purchase of other studies, alliances with other consultants, travel costs, presentation costs, courses, and any other expense that must be disbursed to meet the objectives of the study. Without detriment to the foregoing, SUBTEL will collaborate with information that is available, considering the necessary safeguards of confidentiality, or with actions within its sphere of competence to facilitate the consultant's ability to obtain the information it needs for this study.

3 Current state of the information

For purposes of this study the reference date of the information corresponds to December 2018, in other words, the "present time," and the years shall be counted as of that date. When a date is not indicated in those conditions it shall be understood that it is the present time, considering the date recently indicated. Also, references to time as "current" or "currently" shall be understood to refer to the present time. Unless otherwise indicated, the traffic estimates in this study shall be carried out in 5, 10, 15, 20 and 25 years. To achieve that, at least the information of a historical series of traffic shall be taken from the present time to 10 years in the past, complemented by an expert opinion and other research indicated in this study.

4 Integrity of the Report

The study covers different subjects (demand, governance, regulation, supply, technical) which shall be analyzed and developed comprehensively, in other words, the background information, analysis and/or results in one aspect shall be considered in the development of the rest of the subjects.

5 Added-value and methodology of the consultant

The study presents a number of activities to be carried out that correspond to research, analysis, development, and the minimum studies the consultant should carry out. In that regard, the consultant shall not be restricted to carrying out only the indicated activities so the study shall consider methodologies, sources, and complementary research to the indicated activities that the consultant shall propose and carry out in

order to achieve the defined results and objectives. Those methodologies shall be proposed and they shall be reviewed and corrected through the development of results during the follow-up stage with the Technical Counterpart of SUBTEL.

6 Tracking

The Project Leader shall present the progress of the project every week, stating at least:

- a) Level of progress compared to the schedule presented.
- b) Main results obtained, according to the activities carried out or underway.
- c) Preliminary conclusions about expected products or results.
- d) Difficulties in obtaining, developing or compiling information, if any, and proposed mitigation actions.
- e) Planning and preparation of the following activities.

Progress shall be presented at weekly meetings, which may be complemented by executive reports, as provided by the Technical Counterpart of SUBTEL. As an exception, the Technical Counterpart may request an advance or preliminary versions of the respective report before its definitive delivery. The consultant may consider that CAF may be an observer at the follow-up meetings, and SUBTEL may share the follow-up documentation with that institution.

According to the progress in the study, its results or partial and preliminary conclusions, the Technical Counterpart may request greater depth and specificity, new information, different sources, changes in methodologies or a specific orientation for the subjects discussed in the study, during the course of the preparation of the report, as indicated in articles 16 and 17 of the Administrative Specifications.

Chapter V. Contents of the study

SECTION A. DEMAND STUDY

1 Objectives

1.1 General objective

Identify, measure, and project the potential demand in markets of interest for data transport between Asia and South America, including transit routes to the Atlantic and other continents, each country's independent demand, the demand of data centers and the potential for development of emerging verticals (productive sectors intensive in requirements for digital connectivity).

The information shall be provided in a way that facilitates the execution of the following stages of the study, in other words: a profitable business case for the submarine cable, as entry information for an PPP model, for the choice of the route, in order to determine landing points and other relevant variables.

1.2 Specific objectives

In the reference periods indicated in the Scope under the title "Current State of the information" the consultant shall analyze the demand for submarine cable from different sources of data traffic, so it shall:

- a) Define the potential demand in the main countries that the submarine cable could provide coverage for, regardless of the landing points (dependent variable).
- b) For each country among the ones indicated in the preceding point, define the relevant sectors and companies that are the main users of data traffic through submarine cable, indicating the levels of data traffic of each one of those industries for different periods of time.
- c) For each sector (or industry) defined in the preceding point, define the model companies in the world that are the main generators of international data traffic, indicating their levels of traffic for different periods of time.
- d) Document and project consumption of data of the model companies in the preceding point by means of technologies and uses-processes.

- e) By means of the same scheme of technologies and uses-processes of model companies, document the consumption of data of the companies being studied (the ones that will be users of the submarine cable).
- f) Estimate the gaps in data traffic of the companies being studied compared with the model companies.
- g) Project the data traffic for each pair “country being studied” – “industry being studied.”
- h) Determine the demand for independent traffic in each country, being careful not to repeat demands for data considered previously.
- i) For each country, determine the demand of Data centers and the new emerging technologies on the submarine cable.
- j) Determine the demand for traffic in South America to other continents, being careful not to repeat demands for data considered previously.
- k) Determine the demand for backup of the current and projected supply of data between South America and Asia, being careful not to repeat data demands considered previously.
- l) Add the different sources of demand for each country being studied, being careful not to repeat data demands of different origins.
- m) Project data traffic for each “country being studied.”
- n) Add total traffic of each country being studied and estimate the market share of the submarine cable considering at least two options: that it is the landing point or that it is served by a transit route.

2 Activities

The demand study is based on three premises that require a non-traditional analysis:

- a) At the present time multiple technologies are being developed, which will converge in the next few years; therefore, there is no history of their impact on international data traffic.
- b) There are no direct routes between Asia and South America. Therefore, current information on traffic is biased by two factors: on

the one hand it is hidden in the traffic that is sent to the USA and, on the other hand, deficient connectivity could limit the development of technological business models between the two regions.

- c) In the past few years different projects involving submarine routes have arisen that could strengthen data traffic in South America with various continents in the world. Therefore, besides direct traffic with Asia, there could be transit traffic to other regions that increases demand on the submarine cable.

The preceding premises mean that the demand study should be focused mainly on finding information that is not visible in methods based on historical series (for example, CAGR, as defined in the section on Preliminary Definitions). Projections based on historical series are still useful as a complement, but it will be very important to investigate additional sources of demand that represent technological evolution and the evolution of connectivity in South America better. This is the sphere where the activities of the demand study are focused.

In the context of the interest the project generates in the regions of Asia and South America, the consultant should initiate the study of potential demand for data traffic on possible routes for the submarine cable. It should also estimate what part of the traffic would be transported by this project and what part by other operators. For this reason in developing the activities indicated below the consultant should at least:

- a) Request information from the main benchmarks of demand in the world, including suppliers of submarine cable, studies from regional agencies, leading technological companies, etc.
- b) Request information about submarine cables, data traffic on them, data traffic generated and consumed because of new submarine cables, among others, from the corresponding suppliers of international transport, including CenturyLink, Verizon, Telstra, Tata Communications, Vodafone, AT&T, Level 3, Telxius, Google, Microsoft, Amazon, Facebook.
- c) Identify centers of generation and consumption of data traffic in each region (Asia, Oceania [to be evaluated in the project] and South America) and the interaction among them.
- d) Interview companies with intensive use of data traffic, either as generators or consumers of traffic.

2.1 Define the potential demand in the leading countries the submarine cable could cover, regardless of landing points.

In this section the different countries will be characterized that can contribute with demand to the project in order to verify, in an early stage of the study, which countries are most relevant. The consultant should bear in mind that this section presents synergies and should be consistent with the information that will be collected and generated in the section on governance. In order to achieve this:

- a) The consultant should explore the aggregate potential of the following countries to generate data traffic over the submarine cable (most probable direct markets):

- i. Brazil
- ii. Argentina
- iii. Chile
- iv. Peru
- v. Bolivia
- vi. Venezuela
- vii. Colombia
- viii. Uruguay
- ix. Paraguay
- x. Japan
- xi. China
- xii. Australia
- xiii. New Zealand
- xiv. Taiwan
- xv. South Korea
- xvi. India
- xvii. Singapore

Without detriment to the foregoing the consultant shall analyze other markets it considers relevant in the Asia-South Pacific rim, including markets that will be served by transit routes.

- b) The consultant shall use sources of traffic information that are well-recognized in the market to determine the origin-destination of international traffic:
- i. Aggregate domestic data traffic in each country, as well as the data the consultant includes from 5 years ago, 10 years ago, and projected to 5, 10, 15, 20, and 25 years.
 - ii. Aggregate international data traffic in each country at the present time, 5 years ago 10 years ago, and projected to 5, 10, 5, 20, and 25 years.

- iii. International traffic matrix at the present time among the indicated countries, with the possibility of modifying the year by agreement with SUBTEL.
 - iv. At least 2 summarized views of the above matrix, using the destinations as an aggregation variable.
- c) The consultant shall contact the telecommunications authorities in each country, information centers, experts, and others to determine the following information at the present time:
- i. Total Tbps, occupied and vacant, of data on existing cables to current demand distribution centers.
 - ii. Total projected Tbps, occupied and vacant, to current demand distribution centers in a period of 5 years.
 - iii. Describe in detail submarine or terrestrial fiber optic cables the traffic circulates through and indicate the owner of the cable. There should be detailed information about previous traffic on each one of the cables.
- d) The consultant shall deliver socio-economic information on each country, tabulating at least the following data:
- i. GDP
 - ii. Population
 - iii. Reciprocal trade in MM USD with America for the countries in Asia.
 - iv. Reciprocal trade in MM USD with Asia for the countries in America.
 - v. Levels of investment in telecommunications infrastructure per country.

The consultant shall agree with SUBTEL whether it is appropriate to exclude some countries from the demand study if there is little probability of their using data through the submarine cable. The group of countries that are not excluded shall be called “countries being studied.”

2.2 For each country being studied, define the relevant sectors and companies that would be the main users of data traffic through the submarine cable, indicating the levels of data traffic in each one of those industries for different periods of time.

After the countries being studied have been defined, in other words, the ones that contribute with demand for the submarine cable, a determination should be made of the economic sectors in each country that contribute with the highest demand; subsequently, the same analysis should be made for the companies.

For each country being studied, in relation to data traffic on the submarine cable, the consultant shall propose to SUBTEL:

- a) Most significant industries, reviewing at least:
 - i. Mining
 - ii. ICT
 - iii. Agriculture
 - iv. Scientific and academic sector
 - v. Entertainment
 - vi. Banking

- b) Most significant companies in each one of the proposed industries

For the foregoing the consultant shall define the sources of necessary information, and it shall also tabulate and consider at least:

- i. Contribution to GDP of the respective country
- ii. Size of its business abroad
- iii. Size of its business in Asia
- iv. Size of its business in South America
- v. If the company is included in recognized rankings of global companies, for example, S&P or Forbes
- vi. Internationalization plans in Asia or South America
- vii. International data traffic by sector and company in the periods defined in the scope under the title “Current State of the Information.”

The selected sectors in all the countries being studied shall generate a single list that shall be called “sectors being studied.” This list shall contain a set of pairs organized by sector-country, in other words, the same sector may be included in one country and excluded in another, if it is not relevant. The companies shall also create a list called “companies being studied.” Note that the methodology goes from the global to the particular: from countries and economic sectors to companies. Nevertheless, companies that are not included by the methodology, but may be relevant to data traffic through cable because of their income level, inclusion on international lists, or being recognized in technological markets shall be included on the list of “companies being studied.” To achieve this, the consultant shall select the companies in each country with the highest income and highest international data traffic (destination does not matter), shall compare them with the companies being studied that have already been selected, and shall include the ones that are similar either because of income or data traffic.

2.3 For each sector (or industry) being studied, define model companies in the world that are leading generators of international data traffic, indicating traffic levels for different periods of time.

The objective of this section is to find companies that serve as a standard of reference, specifically in the consumption of international data in order to estimate increases in data between Asia and South America that cannot be detected by historical methods of projection of demand.

For each sector being studied, the consultant shall agree with SUBTEL on what companies are “model companies,” which may be in any country in the world. Because they are “model” these companies may be in any region on the planet. The important point is that they make it possible to detect and project large volumes of data traffic that are not visible in historical series of aggregate demand. They shall be used as a reference because of the level of data traffic they generate, always making sure those companies are the most relevant to this study. In order to achieve this, the consultant shall consider at least:

- a) World leaders in each industry in annual income
- b) Inclusion in international rankings like S&P and/or others indicated by the consultant
- c) Case studies from universities, consulting companies, or other sources
- d) Recognition for having the best practices in technological matters and ITC.
- e) Reports from experts or consultants recognized in the market
- f) Level of international data traffic the company generates
- g) Level of domestic traffic the company generates in the country of its head office
- h) Potential for long-term development
- i) Other information the consultant considers relevant

2.4 Document and project data consumption of model companies by means of technologies and uses-processes

The objective of this section is to identify the most relevant variables that determine data consumption in model companies and to model that so it serves as a pattern for the companies being studied. The consultant is requested to document the processes to generate information that supports the comparison appropriately; however, it should be understood that this information may be sensitive or confidential so the consultant is expected to take the appropriate safeguards in every case. The central objective of the comparison is to show the potential for growth in the use of data by the companies being studied.

For each one of the model companies the consultant shall do the following:

- a) Detailed description of technological systems that demand data in the model company.
- b) Detailed description of technologies that include remote actions (example: commands, video streaming in real time, among others) and estimate, if not the real data, of the demand for data they consume.
- c) Estimate, if not empirical data, of current consumption of data in each company.
- d) Determine and model the main drivers that determine the use of data
- e) Projection of data consumption in each company as indicated in the scope under the title “Current State of the Information.”
- f) Generate a model that explains data consumption of the model company and can be contrasted with a third company to estimate gaps and potential for growth in data consumption. This model shall provide information at the present time, in 5, 10, 15, 20 and 25 years.

The consultant shall use and document primary sources of information, also collect and request information of the managers of the companies that are selected and, particularly, it shall interview senior managers of the model companies, especially the managers in charge of technology in each model company. The costs associated with this information are the consultant’s responsibility.

2.5 Document and project data consumption of companies being studied using the same scheme of technologies and uses-processes of Model Companies.

For each company being studied, the consultant shall identify the model company or companies in the same industry and compare it with the model generated previously. The emphasis in this modeling lies in the consumption of data through the submarine cable; therefore, it will be especially interesting to understand intercontinental data consumption. In cases where current exchange between Asia and South America is not relevant research will probably show the existence of international growth plans that will generate traffic through the submarine cable. In those cases, the consultant shall choose the appropriate focus of study to permit a subsequent projection of traffic. In cases where the comparison of the model company and the company being studied does not provide relevant information, the consultant shall explain the reason, describe the processes of the company being studied, and describe how it resolves those needs. Then, it shall project its consumption of data through the submarine cable between Asia and South America.

In order to illustrate what is being sought, and without being a thorough analysis, the following study examples are presented (it shall be understood that the model companies and the companies being studied that are shown below are examples, and they could be included in the consultancy or not):

- a) Rio Tinto is a mining company headquartered in London with a high level of automation and supervision at some of its works, probably by means of very high consumption of video streaming so it generates various Tbps of information; in this example it would be the model company. BHP is an Australian mining company with important operations in South America, and in this case BHP would be the company being studied. It would be interesting to find out whether BHP has the same data traffic levels between its Head Office in Australia and its operations in South America and, if not, to determine the reasons for the gap and, if possible, to project a similar traffic level in the evaluation horizon of the project, which shall be responded and substantiated by the consultant. It should be noted that Rio Tinto and BHP have a stake in Escondida mining company in Chile; therefore, Río Tinto could also participate as a model company and as a company being studied, comparing different operations in the world. An analysis like this one makes it possible to find out about a possible user of international data through the submarine cable, and we expect that the consultant will detect similar cases.

- b) Santander Bank has important operations in South America so in this example it would be the model company. While the Bank of China is one of the most important banks in the world, it has a limited presence in South America, and in this case it is the company being studied. It would be interesting to know what its data consumption through the submarine cable would be if it decided to reinforce its operations in the region. The Bank of China is an example of a company whose current traffic in South America is not significant, but if the study detects that South America is in its internationalization plans, then it would be interesting to estimate its needs for international data to the region.
- c) Ellalink is a submarine cable being built between South America and Europe that was conceived to link the scientific and academic communities of the two continents; those communities would be the model “companies.” It would be interesting to know whether there is a similar scientific community in Asia or Oceania, which would be the “company” being studied, and it would be interesting to know about its possible needs for traffic with South America.
- d) The astronomical observatory LSST, which in this case would be the model company, will be finished in 2022 and it will be located in northern Chile. This project has planned a 100 Gbps link by diverse route to the USA, which will reach Santiago and continue from there to Valparaíso and Argentina. It is even projected that the capacity of this link could increase in the future. There has been an offer to make the information public, and that could generate large volumes of regional data traffic depending on where the servers (data center) are located. Since the project has been sponsored by Google and Google has a data center in Quilicura (Santiago, Chile), it is possible the public information could be located in Chile, and it could generate high traffic to other continents. A project of this kind is very attractive for a submarine cable, but it cannot be identified by income variables in the methodology set forth. Therefore, it has been requested that the academic and scientific sector be studied specifically to identify this kind of project. The consultant’s research shall consider, for example, situations like the intention of agencies in Asia or countries like China or Japan to install a similar observatory, or another research center intensive in data. The question of whether the LSST project and the public information it provides will be generators of traffic through the submarine cable to Asia should also be explored. Another example, along the same lines, is the case of the EHT observatory used to obtain the first image of a black hole by means of an arrangement of radio telescopes, some located in

Chile. In order to accomplish this, 5 petabytes were required, which were transferred on hard disks because sufficient capacity was not found on internet, which is once again an opportunity for traffic through the submarine cable. The consultant should consider the fact that similar situations can occur in other sectors, for example in the entertainment industry.

The consultant shall bear in mind that, as indicated in the general objective, this information will be used subsequently to make a business case for the submarine cable, as input information for an PPP model, and for the choice of route and landing points. Therefore, it has to make sure that its future use will be public. The consultant shall deliver all the information obtained or generated by this study, indicating which information is confidential and the length of time it shall remain confidential, making sure the confidentiality does not compromise the clarity, integrity, and completeness of the study for possible investors.

2.6 Estimate gaps in data traffic of the companies being studied compared with model companies.

The consultant shall compare each company being study with the model company or companies in the same industry and estimate the potential for international data consumption between Asia and/or Oceania with South America, as applicable.

To estimate data traffic it shall use the information collected previously on model companies and compare it with current operations of the companies being studied, as well as their growth projections The consultant shall interview the companies being studied, if necessary, to support this estimate and it may use other sources of information.

The consultant shall estimate the market share of the Chile-Asia submarine cable. In order to accomplish this, it may rely on the information collected in the supply section. A projection shall be made in 5, 10, 15, 20 and 25 years.

The consultant shall explore technical variables, for example latency or jitter, to define whether the cable is actually a viable solution or whether it should be ruled out for some or all of the typical uses of the model company.

2.7 Project data traffic for each “country being studied”-“industry being studied” pair

For each “country being studied”-“industry being studied” pair the consultant shall identify the companies being studied and project the results to the whole industry in that country. In order to achieve this,

for each country the main players in each industry being studied shall be identified and compared with the model company or companies (or company being studied if more appropriate). Subsequently, a driver of demand shall be defined, and the contribution of the data traffic of those companies shall be weighed reasonably to achieve a realistic value (a realistic estimate is sought, not an optimistic estimate). The part of the industry that does not generate significant differences in the projection of demand because of its level of atomization may be estimated by other methods recommended by the consultant. A projection shall be made as defined in the scope.

2.8 Independent traffic demand by countries

This is the demand for data traffic through the submarine cable that is generated by the users of a country, whether they be persons, companies or government that is not analyzed in the sector/company study. The consultant shall separate by country being studied and continent. For all the foregoing, this analysis requires the conceptualization of traditional models and disruptive demand models. Disruptive demand models shall be understood to be all those projections of data traffic that consider technologies and markets that do not generate large volumes of data traffic yet, but could generate it in the future. To accomplish the foregoing, the following critical points should be established:

- a) Classify disruptive sources of demand with a focus on the project, according to reports from different experts recognized in the industry.
- b) Consider for each country, at least:
 - i. Volume of incoming and outgoing data
 - ii. Speed of traffic respectively
 - iii. Type of traffic (example: domestic, international, caché storage)
 - iv. Type of network of use (example: fixed, mobile)
 - v. Type of data (example: voice, audio video, image, text, animation)
 - vi. Type of application (example: videos, Web browsing, social networks, downloading files, games and others).
 - vii. Projection in 5 10, 15, 20 and 25 years of generation or consumption of data traffic, as applicable.

2.9 For each country, determine the demand of world-class data centers, CDN, IXP, and new emerging technologies through the submarine cable.

Content providers are considered to be the main generators of data traffic at the international level. In turn, those companies are currently also the main investors in international fiber optic cables. It is a known fact in the market that the main users and investors in submarine cables are the big companies that own data centers and offer cloud services. However, the use of the services of data centers could be seriously affected by the convergence of new technologies that generate new business models and sources of traffic. Therefore, this section seeks demand from two different points of view: leading companies and the impact of new technologies. Consequently, leading companies in the market should be studied with their portfolio of current products, and data traffic including the impact of emerging technologies should be projected.

2.9.1 Study of leading companies

This section studies the demand of leading companies in the world in data center and content markets, including CDN and IXP, as well as collecting traffic at the present time and projecting traffic in 5, 10, 15, 20 and 25 years. The focus shall be on estimating the demand for data from Asia/Oceania, on one end, to and from South America on the other.

- a) Determine data centers of global players that could establish themselves in the region in the horizon of the project, including:
 - i. Amazon
 - ii. Google
 - iii. Microsoft
 - iv. Facebook
 - v. Alibaba
 - vi. Other proposals by the consultant in its offer
- b) Determine international traffic that operators of data centers would generate between Asia and South America.
- c) Determine market share of the cable being studied.
- d) Determine relevant CDN and IXP in the region (South America)

The consultant shall use primary sources of information. It shall meet with senior executives at data center companies and experts, and it shall review demand studies to obtain projections of demand with and without project, and plans for location in the horizon of the project.

2.9.2 Impact of new technologies

There is a broad group of technologies identified by the market as the ones that will develop the most successfully in the future. In general, those technologies generate a low amount of demand for international traffic today. However, it is to be expected that demand will grow explosively and, therefore, it is not appropriate to project that demand with traditional methods (for example, CAGR) when depending on factors that are not well represented in historical series. The consultant shall propose the technologies to be studied and ad-hoc methods for each technology to estimate the demand at the present time and to project demand in 5, 10, 15, 20 and 25 years. Some technologies and methods are presented that should be included, at least, in the consultant's offer.

- a) The following technologies should be considered, among others:
 - i. Electronic commerce
 - ii. Cloud computing
 - iii. IoT
 - iv. Big Data
 - v. Other technologies arising from the study of model companies and/or proposals by the consultant

- b) Determine historical traffic demand according to the periods indicated in the scope, produced by each one of the technologies mentioned above, on the following routes:
 - i. USA – Asia
 - ii. USA – Europe
 - iii. USA – South America
 - iv. Asia – Europe
 - v. Asia – South America
 - vi. Europe – South America

On each route “outgoing” traffic and “incoming” traffic should be indicated, as well as the number of specialists at each end, and the size of the industry at each end, for each technology being studied. The objective of this study is to determine the historical behavior of the demand curves in more advanced markets than the South American market and, by comparison, to project the behavior of those markets in their early years.

- c) Estimate new electronic trade/services that could be developed in 5, 10, 15, 20 and 25 years for the technologies considered between Asia and South America, which is assumed to be the objective of the submarine cable project.

- d) In the case of IoT the consultant shall verify its analysis that data demand includes the following effects typical of technological evolution and the existence of higher speed networks.
- i. Growth in average data consumption of the equipment, considering that the current average use of data is limited because most of the users use 2G mobile technology (mainly because of the resilience of the link and consumption of energy), but the development of 5G and the convergence with other technologies may vary the average use of data of the devices explosively. The consultant should consider that 5G may signify a revolution in this market by working with multiple frequencies, taking advantage of each one of them, making it possible to go from a situation where there are few devices, traffic in bursts, and low band width to a situation where there is greater density of devices per surface, continuous traffic, and greater band width per device.
 - ii. Explosive growth in the use of IoT devices due to the appearance of new applications. The estimate should be realistic without ceasing to be disruptive, and based on analysis by experts and entities recognized in the market.
 - iii. New business models between Asia and South America. The concurrence of the cable being studied and the Curie cable may generate a supply that has been non-existent to date and they could spark the appearance of new technological services between the different landing points of the submarine cable. It is expected that the consultant will propose and project new services that could be generated between the two continents. For example, the convergence of cloud computing, Big Data, and IoT could generate a supply of domestic services in South America that are processed from Asia or vice versa. More than an effort involving creativity and ingenuity, the consultant is expected to review sources validated in the market that project that kind of business model, that explores existing businesses in Asia and South America and projects its contribution to the demand for cable.
 - iv. The consultant shall estimate with good reason that part of that traffic was already included in other analyses in this same study.

The consultant shall use primary sources or may use studies from other companies, provided those companies are recognized internationally, and in the telecommunications market or in financial markets, and the information has been constructed on primary sources of information. The consultant may agree on a different methodology with SUBTEL for this study, which shall be documented.

2.10 Analysis of demand on Transit Routes in South America to other continents

Demand on transit routes shall be understood to be the amount of international data that come from the submarine cable between Asia and South America to other submarine or land cables present at the ends of the cable, landing points or bypasses. The consultant shall consider they exist and different submarine cables are projected to service the need for transport of data from South America. Also, it shall consider there could be landing points on the Chilean coast and the Peruvian coast in the definitive construction of the submarine cable (to be evaluated in the project). Considering the different options of landing points, potential demand to transit routes (other existing or projected land or submarine fiber optic cables) should be estimated in the direction of the South American Atlantic coast, the United States, Mexico, Europe and Africa. This estimate should be based on long-term scenarios, considering significant improvements in the current routes to neighboring countries. In this regard, the consultant should consider that Brazil is a very important market; therefore, connections through Atlántico de Fortaleza and Sao Paulo should be studied in detail. The consultant should note there is synergy in this study with the PPP study and supply, as transit routes are used in those three spheres, so there should be coordination among the different work Teams.

For better understanding of this point, the following is a partial example of analysis of transit routes: in Chile the main investors in international cables have been private with no state intervention. In the north of Chile, the private operators Telefónica and Claro have land FO that connects with Peru, and the private operator Entel built land FO to Bolivia. In the central area of Chile, private operators Telefónica and Silica networks have land FO that crosses over to Argentina east of Santiago. Likewise, in the south there are land FO's that connect to Argentina east of Osorno, Coyhaique, and Punta Arenas.

Regarding submarine FO, there are SAM-1, SAC, and PanAm cables, and Google will soon build the Curie cable. All the submarine FO's

mentioned make it possible for Chile to be connected to the rest of South America and the USA.

There are also other projects being studied that consider the construction of a land FO to Argentina, east of Antofagasta and La Serena.

All of the above examples lead to the conclusion that from a landing point in Chile it is possible to interconnect and link different transit routes to other points on the continent, using land and/or submarine FO, currently built or to be built.

Therefore, the consultant is expected to verify and complete the existing land and submarine FO and the FO to be built in order to identify possible transit routes, destinations, and demands. Thus, it will be possible to add demand and identify potential destinations for the Asia Pacific submarine cable through so-called transit routes.

The countries where the consultant shall study transit routes are the ones where the cable can have a landing point and the ones that are possible investors. The following should be considered, at least:

- a) Chile
- b) Peru
- c) Argentina
- d) Brazil
- e) Mexico
- f) French Polynesia
- g) Hawaii
- h) New Zealand
- i) Australia
- j) Singapore
- k) China
- l) Japan
- m) South Korea

The following list includes possible transit routes to be explored, in other words, possible bypasses to other countries through countries near Chile, in view of the existence of a potential landing point in Chile of the Asia Pacific submarine cable.

- a) Chile to Brazil Transit: It should consider current transit and possible transit to the United States via the AMX-1, GlobeNet, Monet, Seabras-1, SAEx1, and BRUSA cables; via EllaLink to Europe and via SAIL, SABR, SACS, and SAEx1 to Africa.

- b) Chile to Uruguay Transit: The analysis should include potential for transit to the Tannat, Bicentenario, Unisur cables and future implementations from that country to other continents.
- c) Chile to Argentina Transit. Research should contain potential for traffic of the Malbec, ARBR, Atlantis-2 cables and future implementations from that country to other continents.
- d) Other routes that result from the consultant's analysis.

For each one of the potential cases of demand described above, the consultant shall project potential demands in the present time and 5, 10, 15, 20 and 25 years in the future.

2.11 Study of demand for Backup of current and projected supply of data between South America and Asia.

The consultant shall verify the interest of international companies in backing up its data through this project. Two methods shall be used to achieve this:

- a) The leading suppliers of submarine cable services between the USA and Asia, and the USA and Oceania, should be contacted and inquiries should be made about their interest in having filaments or capacity in this project and, if so, what capacity and what price. Current suppliers and those who announced the construction of cables in the next few years shall be contacted to achieve this.
- b) Current traffic between Asia and South America should be investigated and described. The main data users should be identified, which may be telecommunications companies or not. They should be asked whether they are interested in having backup in this project and, if applicable, the capacity and price they would seek. The consultant shall also find out if the existence of the cable will signify an alternative to the user that it might change to, if this project offers the same price as its current supplier. The consultant shall also inquire about some variations in the price that it indicates. Oceania should be included, which is also a relevant market in this analysis.

2.12 Add the different sources of demand for each country being studied

For each country the consultant shall analyze and add the different sources of demand for data traffic through the submarine cable, as

well as a projection according to the time periods indicated in the scope. For greater clarity, the sources are:

- a) Demand of industries being studied
- b) Independent demand
- c) Demand of data center and new technologies
- d) Demand for transit
- e) Demand for backup
- f) Other sources of demand that the consultant proposes

In adding the data traffic the consultant shall be especially careful to document the way it made sure there was no overlap between the different sources of data traffic, in other words, it shall be very clear about the fact that the demands are not added twice. The consultant shall project the traffic according to the time periods indicated in the scope.

2.13 Add the total traffic and estimate the market share of the submarine cable in each country being studied, considering at least two options: it is a landing point or it is served by a transit route.

The consultant shall add the traffic of all the countries being studied and estimate total demand for data through the submarine cable at the present time and its projection in 5, 10, 15, 20 and 25 years, being especially careful to define appropriate drivers to establish a realistic market share; it shall be supported by the information collected in the supply section to accomplish this. The consultant shall demonstrate and explain how the demands were added without overlapping. Data on demand through the submarine cable in every country being studied shall be delivered considering at least two options: that it is a point of landing or it is served by a transit route.

3 Deliverables

3.1 Report No. 1

The demand shall be delivered totally in “Report No. 1” on the date indicated for it. It shall contain, at least:

- a) Report explaining the information generated in the activities described above in detail, including:

- i. Separate chapters for each point in the “Activities” with the following structure:
 - a. Introduction: objectives and activities carried out
 - b. Body: information collected, sources of information, presentation of graphs and tables
 - c. Conclusion: summary of results, summarized views of the data, conceptual explanation of the results obtained.

- ii. Appendices:
 - a. Minutes of interviews with senior executives of companies or governments
 - b. Reports, databases, and access to information sources or suscriptions used
 - c. Detailed list of the information compiled in the chapters when it is very voluminous and makes the chapters hard to understand. It is to be expected that the detailed list of the model companies and companies being studied is in this category
 - d. Summary by countries of the information collected and conclusions that have been generated.
 - e. The consultant shall consider that an important part of the information may be strategic to several companies so it will have to be confidential. The consultant shall guarantee that most of the information is public and makes it possible to present the report in a comprehensive and verifiable manner. Without detriment to the above, it shall be clearly indicated that the information shall be restricted to third parties, and it shall only be used by SUBTEL and the consultant for this study. This information shall be delivered in a well-identified independent appendix. The consultant shall inform the period of time when the information must be kept confidential, classifying it in a comprehensive manner.
 - f. Bibliography

SECTION B. REGULATORY, LEGAL, ECONOMIC AND FINANCIAL ANALYSIS FOR VARIOUS ROUTE ALTERNATIVES

1 Objectives

1.1 General objective

Provide information that allows understanding—within the regulatory, technological and geopolitical contexts—the potential countries to be included in the project, as well as the PPP and optimal route proposal.

1.2 Specific objectives

- a) Conduct a study of successful and unsuccessful cases that permit foreseeing the actions to follow in the submarine cable project, with a focus on governance models.
- b) Analyze the regulatory framework of the countries interested in the project and PPP models that can be implemented.
- c) Carry out a preliminary evaluation of the proposed routes considering the economic evaluation, costs, technical scope, governance and the regulatory framework in which these routes can be implemented.
- d) Propose the optimal route whose choice is supported by the studies and analyses conducted in this report.
- e) Make recommendations on the actions that should be taken by the authority and the market in order to positively impact the offer, when applicable.
- f) Generate a submarine cable business model.
- g) Perform a risk analysis and propose actions to manage the risks (commercial, legal, political, etc.).

2 Activities

Among the most relevant aspects for the success of the submarine cable project is the definition of a suitable governance model. This model is affected by political, economic, financial and operational variables. Therefore, an adequate governance model can mean the political support of the authorities of the different countries involved, as well as the possibility of obtaining funding to materialize the project. Consequently, the activities in this section are aimed at finding and proposing a governance model that stimulates the construction of the project.

2.1 Proposal of routes

The consultant must establish the criteria and define the possible routes on which the study will be carried out. In order to do so, he must consider at least the following landing points:

- a) South America's end:
 - i. Continental Chile (Arica, Valparaíso, Concepción, Punta Arenas)
- b) Intermediate points or derivations
 - i. Peru
 - ii. French Polynesia
 - iii. Hawaii
 - iv. New Zealand
 - v. Australia
 - vi. Easter Island
 - vii. Juan Fernández Archipelago
- c) Asia's end:
 - i. Singapore
 - ii. China
 - iii. Japan
 - iv. South Korea
- d) Other options that the consultant may consider appropriate.

2.2 Case study

In order to define a proper governance model, collecting benchmark information of multiple submarine cable projects is considered necessary. To this end, the consultant must conduct an in-depth exploration of the different aspects of the cases and propose a governance model for the project.

2.2.1 Actions

Determine and dimension reasons for success or failure of projects similar to the transpacific cable.

- a) Present the documented history of the case from its genesis, showing the need for the materialization of the project and focusing on the decisive factors for its success or failure.
- b) Investigate and present the investor's business case, including the economic evaluation and conceptual variables considered.

- c) Describe the PPP or governance model used in depth.
- d) Describe the financial, political and regulatory problems that the project had to overcome.
- e) Determine in an aggregated manner the current data offer, clients that contract data transport, capacity of each client, origin and destination of the data it transports. Indicate cable idle capacity, estimated time to fill the idle capacity and upgrade plans. Idle capacity will be understood as the unoccupied capacity of the cable that can still be sold, over the technology currently in operation, whether or not it is illuminated.
- f) Evaluate the synergy of the market in each case with this project. Explain how the case study competes with this project and how the demands complement each other.
- g) Compare each case with this project in terms of demand, supply, impact on the region and other aspects that the consultant may consider relevant.
- h) Explain how the cable deployment interacted with the economies of the participating countries (e.g. Angola Cable in Africa).
- i) Check the actions that each project considers or considered in terms of cybersecurity.
- j) For each case study, make recommendations in two respects: project main factors that should be imitated in the current project to optimize its success; errors or aspects that should be avoided. The focus of the recommendations will be especially, but not exclusively, in the financial-economic, governance and regulatory areas.

The consultant must interview the investors in each project and the consulting companies in charge of the feasibility studies who advised them. In addition, any assumption or hypothesis of the consultant, in the case of the possible scenarios, must be supported by the studies he or she carries out or verifiable information.

The consultant must synthesize the information generated in the case study in order to deliver a governance model recommendation more in line with the current project, to which end he/she shall:

- a) Tabulate the cases by governance model, explaining the key aspects of each case.

- b) Identify the most common models and explain the reasons why they have been chosen.
- c) Propose the most appropriate model among the cases studied and explain how it fits into this project. One option in this case is to take key aspects of several models as long as a consistent and understandable proposal is delivered.

2.2.2 Cases to be studied

- a) America
 - i. South America-1 (Sam-1).
 - ii. South American Crossing (SAC).
 - iii. Pan American (PAN-AM).
 - iv. Pan-American Crossing (PAC)
 - v. Curie.
 - vi. South America Pacific Link
 - vii. CLARA (Cooperación Latino Americana de Redes Avanzadas) network.
 - viii. America Mobile Submarine Cable System-1 (AMX-1).
 - ix. GlobeNet.
 - x. BRUSA.
 - xi. Tannat-Monet.
 - xii. Seabras-1.
 - xiii. Americas-II.
 - xiv. Deep Blue Cable.
 - xv. Pacific Caribbean Cable System (PCCS).
- b) South America-Europe
 - i. Atlantis-2.
 - ii. EllaLink.
- c) South America-Africa
 - i. South Atlantic Inter Link (SAIL).
 - ii. South Atlantic Cable System (SACS).
 - iii. South Atlantic Express (SAEx1)
 - iv. SABR.
- d) Others that the consultant deems necessary to include, including at least:
 - i. Two cases from Asia with another continent,
 - ii. Four case studies referring to emerging regions (may be included in previous cases if the consultant justifies it).

2.3 Analysis of the regulatory framework of the countries interested in the project and governance models that can be implemented.

The consultant should explain the existing governance and PPP models used in submarine FO projects and comparative experience. At this stage, the consultant is required to do an exhaustive search of any PPP models in reference markets.

To this end, the consultant should consider the following aspects:

a) Countries considered as potential investors.

The consultant must define possible landing points for the submarine cable and carry out the regulatory and governance study of such points. In addition, other countries must be added which, like the previous ones, may be possible investors. These countries should include at least:

- i. Chile
- ii. Peru
- iii. Argentina
- iv. Brazil
- v. Colombia
- vi. Venezuela
- vii. Uruguay
- viii. Paraguay
- ix. Bolivia
- x. French Polynesia
- xi. Hawaii
- xii. Nueva Zealand
- xiii. Australia
- xiv. Singapore
- xv. China
- xvi. Japan
- xvii. South Korea

b) Regulatory analysis

Possible governance models should consider the regulatory frameworks in which the submarine cable will be deployed. The main regulatory scopes of countries whose landing points are part of the proposed routes and of potential investor countries should be studied and analyzed in the context of the feasibility of deploying the submarine cable and developing the proposed governance models. The analysis must include the development and deployment of telecommunications infrastructure that the respective country has achieved, as well as the tax policies on

data traffic or on applications operating, if any, as they may have an impact on the viability of the project.

Identify the most relevant laws and regulations that must be considered in the development and implementation of the project. The regulatory analysis should also consider all permits that must be obtained considering the intervened borders and territories. For example, in Chile, a maritime concession granted by Armada de Chile (Navy), an intermediate telecommunications services license from SUBTEL, and from municipalities in the case of the dry plant. The maritime concession may require environmental permits and other specified in the regulations.

c) Context of potential investor countries

For each potential investor country identified above, the consultant should:

- i. Characterize the internal telecommunications market, indicating market shares per operator in each participating country, including a brief description of the telecommunications services offered, and the population and geographic coverage of the main services, as well as, competitiveness indices.
- ii. Describe the points of exchange of national and international traffic, their current transmission capacity, their up-grade potential and their physical and logical vulnerabilities.
- iii. Describe its potential as a regional telecommunications hub, by identifying in which terrestrial or submarine cables it participates, who invested in them and other similar aspects. This analysis must take into account the information from the demand section and include any other relevant aspects.
- iv. Study the investment policy in telecommunications with a focus on submarine cable.
- v. Determine and present how the development of the cable is framed within the plans of its regulatory entity or ministerial agency.
- vi. Determine if the State or a body associated to the cable has invested or has presented investment plans in international fiber optic cables, whether terrestrial or maritime, the amounts of investment involved and all the relevant aspects in the context of the governance model.
- vii. Identify state institutions that may participate in a PPP, indicating the advantages and limitations they have for doing so. For example, Arsat in Argentina and Antel in Uruguay invested in submarine fiber optic cables, so it is

expected that they could participate in the same way in the project. In the case of Chile, there are no state companies that carry out the function of Arsat and Antel; however, SUBTEL has subsidized the construction of FO cables. In Chile, for example, Fondo de Infraestructura S.A. was recently formed and could finance part of the project. The consultant will have to delve deeper into examples of this type for each country.

- viii. Explain how the project can enhance the country's development by analyzing other transit routes (note that transit routes were studied regarding demand and are synergistic with this section).

d) Private individuals who could be potential investors

The consultant should review the information of companies being studied in the demand section and the information of operators/owners from the supply section. Starting from this information companies interested in financing the submarine cable could be identified. On the one hand, the information from the demand study makes it possible to identify the companies that could benefit most from the construction of the cable and, therefore, could be most interested. These companies can be classified into at least two categories: companies that are currently investing, and companies that belong to economic sectors that invest in telecommunications infrastructure. The analysis of both categories could provide a list of companies willing to invest. It is expected that the consultant will also analyze the financial health of the companies and their international growth plans and, consequently, may indicate the viability of the company's investment.

e) Analysis of governance options

For each potential investor country, the consultant must analyze at least the following development options:

- i. Most appropriate PPP model considering current conditions in each country.
- ii. PPP models under the current sectoral legislation, whereby the State subsidizes the private sector, maintaining the private regime of the construction, operation and assets of the network, demanding compensations (such as coverage, SLA and price levels) and awarding the concessionaires that request the lowest levels of subsidies.
- iii. PPP concession models, such as highway concessions. In these cases, the total investment is private, under a system in which the State creates conditions that allow

- investments to be profitable, for example, by creating exclusive service provision or guaranteed demand (from the public sector or from low-income areas subsidized by the State, for example). This PPP model implies regulatory changes, with possible consultations with antitrust organizations, which a priori means analyzing several options: obligatory use under a universal service regime, critical infrastructure regulations, etc.
- iv. Establishing conditions for bidding for use and infrastructure services for certain periods of time during which the State acts as guarantor, which are frequently used in the wholesale international connectivity market called Indefeasible Right of Use (IRU). By this means, the IRU taker can unconditionally and exclusively use a relevant capacity of the network owner at contractually agreed periods.
 - v. Private or Public-Private Consortia. The consultant should explore consortium models in which only private parties are investors or there is a joint private and public sector investment. Examples of these cases are: Monet- Tannat (USA-Brazil-Uruguay, in which Antel, a Uruguayan state-owned company, participates), SACS (Brazil-Angola, in which 60% of the Angolan state-owned company participates) and EllaLink (Europe-Brazil).
 - vi. Other models: The analysis of other models should include historical cases that favored the development of services in a highly competitive environment.

2.4 Identify and quantify the impacts of the project

The submarine cable project is expected to have an impact on the development of the countries it serves. It is also expected that this impact will be greater if the country is selected as a landing point and less if it is in connection with a transit route. Therefore, the consultant should compare at least three possible cases: 1) a situation without project, 2) the country is selected as landing point and 3) the country is served by a transit route. Obviously, there are countries such as Brazil or Argentina with few options of being a landing point. Those cases should indicate this exception and omit only the analysis as a landing point, keeping the comparison of the situation without project and with the country being served by a transit route.

For each country the consultant must identify and quantify the geopolitical, economic and technological impacts of the project, as well as the risks associated with the project. He or she will also have to make an analysis for each region. The definition of which countries constitute a region will be proposed by the consultant, an obvious

possibility being: South America, Asia Pacific and Oceania. However, the consultant may propose a different grouping as a result of the information gathered, considering that the interest is centered in the potential investor countries.

The geopolitical impact is understood to be at least: adaptation of government agencies or companies to the project, regulatory changes, changes in subsidy policies or other equivalent policies, changes in the country's technological role in the region, for example, becoming a technological hub, etc.

The economic impact is understood to be at least: impact on GDP, externalities of the project such as job creation, development of emerging companies, investment by foreign companies (e.g. datacenters).

The technological impact is understood to be at least: development of technological institutions and specialists, supply of new technological services, development of existing services (e.g., broadband or Internet massification), installation of technological centers (e.g., datacenters), etc.

Any additional impacts not addressed in this document, identified by the consultant, must be included in the analysis.

The consultant should quantify the impacts that the initiative would have on the regional economy, considering the growth in interregional traffic, analyzing as a minimum the impact on interconnection costs, the final prices of Internet service, and the results on the quality of the connection.

Starting from the emphasis on connectivity, the consultant should describe how the project represents a lever for the integration of networks and digital markets in South America. He/she must also propose in a clear way and conceptualize derived impacts on other countries of the region.

2.5 Recommendations for the authority to boost demand

The consultant must produce a complete report indicating recommendations for the authority on the actions to be taken in order to positively impact the development of the project, when appropriate, for which it must consider:

- a) Regulatory restrictions in different countries
- b) Competitiveness of the various "sectors under study"

- c) Market position of the "companies under study"
- d) Market entry barriers
- e) Innovation and new technologies
- f) Users in each country
- g) Geopolitical factors
- h) Recommendations on cybersecurity and how the submarine cable project affects it.

2.6 Analysis of economic-financial model

The consultant must carry out an analysis of the different economic-financial models associated with investment models under PPPs, identifying characteristics and relevant aspects that allow the successful implementation of the proposed model. In order to do so, he/she must consider: market concentrations, investment in long-term projects, appropriate regulatory conditions, adequate return and long-term risk, net present value with WACC according to the concession horizon, cash flow in the first years of operation, entry barriers and uncertainty in demand.

Additionally, the proposed financial model must consider a present value model according to the useful life of the assets, including all the necessary parameters for their correct evaluation and sensitization:

- a) Initial investments and relevant up-grades (CAPEX).
- b) Operational Costs (OPEX).
- c) Administration and commercial costs of the service.
- d) Compensation scheme.
- e) Demand for services in the projection horizon.
- f) Capital cost rate of a long-term project.

The analysis must include possible auction or bidding models (minimum service price, minimum investment-subsidy, maximum capacity, maximum coverage, risk insurance for demand, etc.).

The consultant must:

- a) Generate several business cases considering:

- i. Previously studied demand
 - ii. Previously proposed Supply Model
 - iii. Proposed prices
 - iv. Estimated construction costs
 - v. Operating costs (technical, commercial and administrative)
 - vi. Taxes
 - vii. Depreciation
 - viii. Governance structure (partners/owners)
 - ix. Externalities. The consultant must evaluate the cable externalities in the participating countries and then evaluate whether it is convenient to incorporate these externalities into the business case.
- b) Build cases:
- i. Build several business cases considering different route options among the places indicated as possible landing points.
 - ii. Price sensitization
 - iii. Demand sensitization
 - iv. Cases with annualized flows over 25 years
 - v. Selection of 5 more favorable routes incorporating conceptual variables (not only financial), considering 3 scenarios for each route: optimistic, probable and pessimistic.
 - vi. Informed recommendation of the most favorable business case.
- c) The business case must contemplate at least the following elements:
- i. NPV (Net Present Value)
 - ii. IRR
 - iii. NPV/ Investment
 - iv. Payback
 - v. Flows by year
 - vi. Graphs of annual flows and NPV (by year)
 - vii. Other recommended by the consultant

2.7 Evaluation of Routes

Based on the information gathered and analyzed, the consultant must examine the proposed routes in order to evaluate them and determine their feasibility, scope, advantages, disadvantages and projections to select the optimal route. Each route must be evaluated and analyzed considering the following aspects:

- a) Appropriate PPP model according to the regulations involving the countries that are part of the submarine cable, analysis of public-private governance and financing.

- b) Demand and traffic that would concentrate each of its landing points and allow interconnection with other cables (submarine or terrestrial) or interconnection points, with special consideration to possible extensions within the region.
- c) The consultant should explore various financing schemes for the project and propose the one that in his/her opinion is the most suitable.
- d) The consultant should propose an optimal route based on the analysis carried out.

2.8 25-year business model

Based on the information gathered and analyzed, the consultant must build a 25-year business model considering at least:

- a) Business model (e.g. open access, neutral, commercial systems, hub) and value proposition.
- b) Potential service offering
- c) Strategic partners
- d) Key activities
- e) Customer relationship
- f) Target customers
- g) Key resources
- h) Sale and customer service channels
- i) Cost structure
- j) Revenue flows and margins
- k) SWOT analysis
- l) Compensation scheme
- m) Players involved

2.9 Risk analysis and management

The consultant must devote an independent chapter to risk analysis and management, for which purpose he/she must coordinate with the other work Teams: demand, supply and technical. It will be understood, therefore, that all the activities of the study can generate relevant information that must be detected and included in the risk analysis and management. Special attention must be given to the study of comparable cases, which allows incorporating lessons learned from other similar projects and that could be replicated in this project.

The analysis should consider aspects such as: construction, sales, market, cybersecurity, among others. It should also consider all stages of project development and identify the most critical aspects of each stage. At least the following stages of the project should be considered: pre-feasibility and feasibility study, generation of a consortium, construction and operation. The consultant must propose the content of the risk study, including the results found in this study.

Risks are expected to be classified according to their likelihood of occurring (low, medium, high) and their impact on the project (low, medium, high). Also, for each risk, the consultant must indicate the pertinent mitigation measures to be able to manage them.

3 Deliverables

The deliverables that the consultant must provide are detailed in each of the 3 reports:

3.1 Report No. 1

Report No. 1 should contain at least: study guidelines, route proposals, telecommunication context and regulatory analysis of potential participating countries.

- a) Analysis of cases, considering the rationale for their construction, the models used and the way in which the deployment of the cable interacted with the economy of the participants.
- b) Analysis of the above models, indicating which one is suggested for the South America-Asia cable.
- c) Complete report by country indicating the "Regulatory analysis" and "The context of the possible investor countries". In addition, recommendations should be incorporated for the authority and the market on the actions to be taken in order to positively impact demand on the submarine cable.

- d) Annexes by country, including at least the countries under study, possible investor countries and landing points. Each annex should contain an executive summary, synthesizing the key information gathered in the demand, governance, and supply studies. Provide clearly tabulated figures to inform key aspects, adding diagrams, graphs or maps if necessary for the sake of clarity. It is understood that the key aspects contained here are those in the context of promoting the construction of the submarine cable.

3.2 Report No. 2

"Report No. 2" should provide the information detailed below including, at least: comparative case studies, governance models, business cases and evaluation of various routes (include commercial and administrative OPEX), route proposal (best option). The consultant should organize the reports so that they contain:

- a) A complete report on the scope and definitions of each governance model, attaching a comparative table of advantages and disadvantages, list of international models, graphic scheme of how each model works or operates in practice. Also, the main regulatory aspects that should be considered according to the landing points and PPP involved. A governance model (consortium or other alternative) should be included as well as a financing model (whether public, private and/or PPP).
- b) A detailed report of the preliminary assessment of each proposed route, considering technical, economic, financial and regulatory aspects. An outline and comparative analysis of each route must be presented indicating its main characteristics and identifying its advantages and disadvantages, and recommendations for its implementation.
- c) Business case of at least 5 possible routes and their sensitivities indicating a recommendation of route to select.
- d) Economic feasibility analysis (considering estimated data demand of the region and intercontinental traffic).
- e) Business model and operation (25 years).
- f) Study of alternative scenarios (routes with greater economic and political projection).
- g) Analysis of the above scenarios, indicating which one is suggested for the cable between South America and Asia.

- h) Identification and quantification of the impacts of the project, especially those that the initiative would have on the regional economy.
- i) Analysis and actions to manage risks.

3.3 Final Report

In the Final Report, the consultant must further deepen the study of reports No.1 and No. 2 for a single route to be selected by the Office of the Undersecretary. The route will be selected with the information provided by the consultant, but could differ from the alternatives proposed, for example, it could consist of a variation of the routes suggested by the consultant because the information provided by the study so advises. The detail of the selected route must contain at least: PPP model and refined business cases.

SECTION C. SUPPLY STUDY

1 Objectives

1.1 General objective

Identify, quantify, project and determine the supply of existing submarine cables, cables under construction and potential deployments, depending on the potential landing points of the cable, including transit routes to the Atlantic and to other continents that allow the connection between South America and Asia.

1.2 Specific objectives

- a) Identify, characterize and quantify the offer of existing submarine cables, cables under construction and potential deployments, so that they connect South America with Asia.
- b) Project the supply of existing submarine cables, cables under construction and potential deployments connecting South America with Asia.
- c) Determine the competitive potential of the project against future supply.

2 Activities

2.1 General analysis of the submarine cable offer

In the context of the project's interest in the regions of Asia and South America, the consultant must carry out a general analysis of the supply of submarine cables that are deployed between these regions and passing through others, as the case may be, that are currently used as a means to connect Chile with these regions. Therefore, the consultant must:

- a) Identify submarine fiber optic cables deployed, cables under construction and potential deployments, that allow connecting South America with Asia, South America with Oceania, Asia with Oceania, either through direct submarine cables between both points and/or through transit routes (it must be remembered that transit routes were studied in the demand section and presents synergy with this section) and/or indirect submarine cables (submarine cables that pass through other continents to Chile and Asia). This point must be based on information from the main providers of submarine cable analytics (Telegeography, among others).

- b) Identify alternative routes that connect South America with Asia, considering cables currently installed, under construction and potential deployments.

The consultant must use and document primary sources of information, as well as meet and consult information with the directors of the corresponding companies and authorities.

2.2 Analysis of the current supply and projects under construction

This is the existing and future offer that is established according to the possible alternative routes to this project, which allow the connection between South America and Asia. In the context of this section, an alternative route is understood to be the set of one or more fiber optic cables, whether submarine, terrestrial, transit routes or others, which alone or as a whole connect(s) the same origin and destination, i.e. South America and Asia.

For this analysis the consultant must:

- a) Find out about the existing alternative routes, under construction and planned, as well as the companies and governments participating in these projects. This information should include, for the stretches that constitute the route, among others, the following variables:
 - i. Company, Government, Consortium, or other equivalent that own and/or operate the route.
 - ii. Type of Service (spectrum, bandwidth, speed, etc.).
 - iii. Price of services offered by the cable operator(s). At least per Mbps and 10 Gbps prices must be provided, indicating the type of technology (in order to be able to compare routes and to be able to add stretches). Prices of 1 Gbps, 2.5 Gbps, 40 Gbps and 100 Gbps should be verified whenever possible.
 - iv. Regulatory restrictions on e-commerce/services in the countries under study (defined in the demand section). Any taxes associated with the data services that will be transported over the submarine cable should also be indicated, if any.
 - v. Point of origin and destination, and landing or diversion points, supporting this information with maps.
 - vi. Total length and of each stretch.
 - vii. Costs (installation and service, OPEX and CAPEX).
 - viii. Installation time.
 - ix. Amount of fibers installed and amount of dark fibers.
 - x. Capacity (designed, used and vacant).

- xi. Distribution of cable operators and owners (number of fiber pairs, transponders, frequency, capacity, etc.)
 - xii. Latency
 - xiii. Jitter
 - xiv. Year of manufacture and remaining useful life.
 - xv. Type and feasibility of upgrade. Upgrade plans.
 - xvi. Others that the consultant considers relevant.
- b) Generate a short list of the previous routes to obtain the routes that are similar to those of the project, according to: Length, Capacity, Latency, Jitter, Useful Life and other variables that the consultant considers relevant. Cases of interest should be added to the list although they may technically differ from the Asia-South America cable.
- c) Characterization (client, data volume, origin-destination) of the current traffic, on the list of routes similar to the project.
- d) Estimate the current offer of traffic and project it according to the deadlines indicated in the scope.
- e) Establish differences and similarities in the supply of each cable compared to this project, with a special focus on the competitive advantages of each one of the cables.
- f) Classify models of the most common products in the short list of submarine cables, presenting cases of interest and determining the distribution of these models.
- g) Classify the prices of each offer according to their evolution over time, according to the deadlines indicated in the scope.
- h) Compare current and projected prices at least in Mbps (technology should be indicated, usually IP) and 10 Gbps (technology should be indicated, in this case OTU-2 or 10 GE).

The consultant should use primary information sources, consulting the relevant players for the analysis, such as: Verizon, Level 3, Telxius, Google, Microsoft, Amazon, Facebook, among others. The consultant must interview the investors of each project and the consultants in charge of the offer studies that advised them.

2.3 Traffic Routes

The consultant should generate models of transit routes in South America and Asia considering potential landing points on both continents. These models should be accompanied by maps and diagrams that allow a better understanding. Also, this section should

be closely coordinated with the work done for transit routes in the demand and governance sections. For example, Valparaiso is a potential landing point in South America. Valparaíso allows the connection with Santiago and from there to Peru via the FO that runs along the Pan-American Highway, which will soon be enhanced by the Prat project. Continuing through Lima it is possible to access Quito, Bogota and Caracas by land FO routes. On the other hand, there are terrestrial FO routes from Santiago to Buenos Aires and from Buenos Aires to Montevideo, Asunción and Sao Paulo. Therefore, through transit routes, the landing point in South America allows interconnection to other networks, capitals or points of interconnection with other submarine cables. Therefore, it is of interest to know:

- a) Routes (terrestrial and submarine) and their installed and available capacities between the capitals of the example
- b) Installed and available capacities between capitals and their nearest landing points
- c) Routes and their installed and available capacities between the Pacific landing points and the Atlantic landing points.
- d) Owners of the FOs
- e) Prices of each of these routes for various services
- f) Technical characteristics of these routes (latency, jitter, useful life, backup level, etc.)
- g) Suppliers of DWDM or similar equipment that illuminate the routes.

2.4 Proposal of Services and Prices

The consultant must generate a proposal for services with their prices on the basis of the study carried out, as well as a proposal for its evolution over a horizon of 25 years. It must indicate at least:

- a) Characterization of the Asia-South America cable identifying its competitive advantages and disadvantages with other alternatives that potential customers may use.
- b) The alternative cost that a client would have to transport traffic between South America and Asia through routes of other providers (submarine or submarine-terrestrial mix).

- c) Description of services to be offered (Mbps, 10 Gbps, IRU, frequency, dark fiber, etc.), their mix and their respective prices, projecting their evolution over 25 years.
- d) Description of the methodology used to define services, prices and their evolution.

3 Deliverables

3.1 Report No. 2

The complete study of the supply must be delivered in "Report No. 2" on the indicated deadline. The report must contain, at least:

- a) Complete report of the offer of existing submarine cables, cables under construction and potential deployments, that allow the connection of Chile with the Asian continent.
- b) Complete report of the variables involved in the offer of existing submarine cables and cables under construction, which allow Chile's connection with Asia.
- c) Detailed report on the projection and long-term evaluation of the offer of existing submarine cables, cables under construction and potential deployments connecting Chile with Asia.
- d) Detailed report of the competitive advantages of the project compared with the current and future offer.
- e) Service proposal and prices projected at 25 years.

SECTION D. TECHNICAL DESIGN, EVALUATION AND PLANNING

1 Objectives

1.1 General objective

Based on the analysis conducted, to have a complete technical-economic study on the optimal route joining Asia and South America, considering its technical, legal, regulatory and economic scope.

1.2 Specific objectives

- a) Know the latest technologies in submarine cable systems and determine which should be considered for the construction of the submarine cable, according to the characteristics of the project.
- b) Assess preliminary technical solutions that allow dimensioning the scope of multiple routes under evaluation.
- c) Evaluate advanced technical and economic solutions that allow selecting the optimal route.
- d) Specify a high-level technical design that considers the technologies, configurations and projected needs and requirements.
- e) Know the timeline of the implementation of the submarine cable highlighting the administrative and technical milestones of the project.
- f) Estimate the costs of submarine cable implementation and operation.
- g) Determine the technical requirements that must be demanded from the submarine cable builder.

2 Activities

2.1 Technological Alternatives

The consultant should identify commercially available technological alternatives to provide the service that is the object of the feasibility study (e.g. satellites, low-altitude satellite constellations, connection through international routes) and compare their advantages and disadvantages with the submarine cable.

2.2 Submarine Cable System Technologies

Analysis and description of the state of the art and projections of the technology, standards and configurations of the submarine cable systems.

- a) Technical characteristics of the fiber optic cables and criteria to make your choice (standard, fiber pairs, others) according to the submarine cable system to be built.
- b) Technical characteristics of the equipment (dry and wet plant) and criteria to make your choice according to the submarine cable system to be built.
- c) Optical technologies available.
- d) Open wet and dry plant systems.
- e) Capacities of submarine cable systems and limitations according to length, segments, energy and other relevant factors.
- f) Description of the submarine cable network monitoring and management system.
- g) Technical standards and recommendations met by the equipment and components of the system.
- h) State of the art, updates and projections of all the technology involved.
- i) Criteria and requirements of reliability, performance and other key indicators of submarine cable networks.
- j) Examples of design, technology and indicators in submarine cable systems in operation or under construction (such as those quoted in the case study, in the governance section).

2.3 Preliminary Technical Evaluation

Several routes will be mapped that consider the markets and countries of interest (such as those mentioned in the section on demand potential), on the basis of which a preliminary technical design will be prepared for the submarine cable that will identify the basic configuration of the equipment and FO.

- a) Topology and diagram of the submarine cable system
- b) Cable length and segments

- c) Number of pairs of FO, Repeaters and BU (Branching Units)
- d) Land equipment

2.4 Advanced Technical Evaluation

Five possible routes will be selected, on the basis of which the consultant must develop an advanced technical design and its respective economic evaluation, in order to estimate the technical and financial scope of each of them, according to their potential landing points.

- a) Description and analysis of each route
- b) Main design considerations, according to distances, location of landing points and potential traffic.
- c) Key technologies to be considered in the design
- d) Advantages or technical facilities of the route
- e) Disadvantages or difficulties of the route and landing points
- f) Diagram and system configuration
 - i. Overall configuration
 - ii. Power system configuration
 - iii. Fiber optic link design
- g) Fiber optic cable length between landing points and/or BU (as applicable)
- h) Fiber optic cable: pairs and lengths
- i) BU and repeaters
- j) Initial and design capacity
- k) System operation (reconfigurations, upgrades, maintenance, repairs, etc.)

2.5 Associated Costs

Identify and detail the costs associated with the respective solution distinguishing, at least:

- a) Dry plant

- b) Wet plant
- c) Installation
- d) Survey
- e) Monthly and annual operation
 - a. Maintenance agreements (zone and privates)
 - b. Cable repair
- f) Upgrades
- g) Other
- h) Margin of error, identifying sources of uncertainty

2.6 Final Technical Evaluation

Once the optimal route has been defined, the consultant must delve into the layout, route and landing points in order to propose a high-level final solution that makes it possible to accurately determine its technical and economic scope. Also, it will have to prepare a timeline, considering all the aspects that must be taken into account from the design and formulation of the project to its implementation.

2.6.1 Geological, meteorological and oceanographic characteristics, maritime activities, environmental considerations and hazards along the route

The consultant must analyze the geological, marine and climatic characteristics associated with the geographic sector where the marine route would be located in order to know how these conditions might affect the choice of one or another solution for the cable, and to devise possible mitigation measures. At least the following aspects must be addressed:

- a) Geological:
 - i. Tsunamis
 - ii. Seismicity (locations, dates and magnitude of earthquakes)
 - iii. Volcanic activity
 - iv. Tectonic setting
 - v. Seabed composition (e.g. sediment types, sediment mobility and transport, etc.)
 - vi. Seafloor morphology
 - vii. Other relevant or geohazards factors

- b) Climatological:
 - i. Temperatures, rainfall, winds
 - ii. Storms, hurricanes, etc
 - iii. Flood prone areas
 - iv. Seasonal variations
 - v. Other relevant factors

- c) Oceanographic:
 - i. Typical sea state in the region of interest
 - ii. Marine currents
 - iii. Bottom water temperature
 - iv. Winds and waves
 - v. Tides
 - vi. Other relevant factors that may affect survey and installation

- d) Maritime activities:
 - i. Fisheries
 - ii. Transport
 - iii. Exploitation of minerals, hydrocarbons
 - iv. Submarine cables or ducts
 - v. Other relevant activities

- e) Environmental considerations:
 - i. Regulation
 - ii. Protected marine sectors
 - iii. Other relevant factors

- f) Hazards
 - i. Natural or artificial obstructions
 - ii. Threats or safety risks

As summary, the consultant must prepare a risk matrix, according to the risk category and region, identifying its impact on the project (low, medium, high).

2.6.2 Obtaining permits and authorizations

The consultant must review the permitting processes required for the implementation of the submarine cable considering, at least:

- a) Limit of national/territorial waters, contiguous zones, exclusive economic zones, disputed waters, maritime boundaries, marine sanctuaries and, in general, any maritime limit relevant to the survey, installation and/or operation of the submarine cable, defined by the United Nations Convention on the Law of the Sea and/or local and international regulations.

- b) Regulatory requirements for marine and terrestrial activities such as environmental reports and studies, permits (installation and operation), notice to mariners, fishery seasonal restrictions, visas, equipment importation, etc., with a special emphasis on environmental regulation, which must be described and summarized in a matrix or list of permits, indicating their processing times.

2.6.3 Final system design

After analyzing the geological, meteorological, oceanographic characteristics, maritime activities, environmental considerations, route hazards and permits, the consultant must indicate the impact on the original technical solution in order to propose alternatives and modifications that allow implementing the solution in an optimal manner. Also, the consultant must specify and detail the definitive technical solution

The main aspects of the technical solution must be specified (wet plant, dry plant, layout, installation, operation) that allow the correct operation of the selected route. Therefore, it is necessary to know the main design considerations.

2.6.4 Final Solution Design Considerations

The general framework and most relevant aspects that are considered in the technical solution, bearing in mind its landing points, submarine cable length and existing conditions.

Identify the design criteria that are indispensable for the technical solution, considering the distance, landing points, traffic projection, technology and, in general, the facilities and restrictions of the selected route. The considerations must at least contemplate the following:

- a) Optical technologies more appropriate for the operation of the submarine cable.
- b) Route recommendations (hazards, sea depths, seabed features, buriability, etc.)
- c) Types and quantities of cable
- d) Standard of fiber optic cables
- e) Number of fiber optic filaments
- f) System of repeaters and distance between them
- g) Wavelengths for each fiber optic filament

- h) Initial system configuration
- i) Upgrade model that allows expanding the system to its designed capacity
- j) Recommendation for future plans of expansion towards other Terminal Stations or terrestrial Nodes.
- k) Line/tributary interfaces
- l) Energy system
- m) Modulation scheme
- n) Design life
- o) System reliability (architecture, performance and reliability indicators and calculation, failure and repair probabilities)
- p) Optical budget³
- q) Others, according to the technology and critical aspects of the specific route

2.6.5 Topology

Specify diagrams or sketches of the entire submarine cable system including at least:

- a) Location of wet and dry plant components
- b) Terminal Stations
- c) Active and passive elements
- d) Optical capacities and/or channels
- e) Length of segments, types and quantities of fiber optic cables
- f) Locations of the proposed route

2.6.6 Landing points

Characteristics and specific requirements of the landing points including at least:

- a) Crosses with submarine cables in operation and/or laid.

³ Rec. ITU-T G.977

- b) Submarine cables in operation or to be built with which it could be interconnected.
- c) Nearby telecommunications infrastructure or interconnection points.
- d) Terrestrial routes with which it could be interconnected.
- e) Possibilities of deployment to other transit routes.
- f) Possible Terminal Station sites and BMH location.
- g) Advantages and disadvantages.

2.6.7 Wet plant

Characteristics, configurations and specific requirements of all the elements of the humid plant that includes, at least:

- a) Submarine fiber optic cable: types of cable to be installed (protection vs. depth) and the fiber pairs that will be available. Main mechanical, electrical and optical characteristics.
- b) Repeaters: Submarine cable repetition system and its main characteristics.
- c) BU: Split system, treatment of optical channels and their main characteristics.
- d) Other elements such as equalizers, filters, splices, etc., that are relevant.

2.6.8 Dry plant

Characteristics, configurations and specific requirements of all the elements of the dry plant including at least:

- a) Terminal Station: Characteristics and specifications of rooms and facilities of the station that allow interconnection.
- b) Equipment: Line terminal equipment. Transmitters, receivers and interfaces. Multiplexing characteristics, signal processing and supported optic channels. Associated standards.
- c) Land system: Configuration, fiber optic cable, power and return earth cable, joints, instalation (burial, duct), BMH.
- d) Energy: Power system and main requirements according to equipment and submarine system.

- e) Monitoring: Characteristics of supervision, management and monitoring of the system.

2.6.9 Installation recommendations

- a) Dry Plant: analyze the procedures associated with the installation of the dry plant and its interconnection points:
- i. Transfer and custom clearance of equipment
 - ii. Execution of associated civil works
 - iii. Equipment installation protocols
 - iv. Acceptance tests and certifications
 - v. Duration of test periods and start-up periods
- b) Wet plant: know the methodologies, technologies and resources necessary for the submarine cable laying including:
- i. Survey and its main considerations
 - ii. "Time window" requirements to conduct the marine operations
 - iii. Loading, transport and operation of cable during installation
 - iv. Installation vessels
 - v. Methods to install the cable in deep water, in shallow water and/or near shore, and in the vicinity of landing points.
 - vi. Buring requirements
 - vii. Timeframes for execution until commissioning

2.6.10 Operation recommendations

- a) Performance: analyze indicators, statistics and other elements that allow estimating the performance of the system, such as:
- i. Availability
 - ii. Transmission error rates
 - iii. Other relevants
- b) Maintenance: the operation of the system is fundamental, considering that failures can cause the system to be unavailable.
- i. Maintenance operations plan: Procedures and frequency of preventive maintenance. Inspection, revision or replacement of main element.
 - ii. Faults and repairs: Action protocols in the event of failure. Response levels according to failure and associated times.

- iii. Maintenance agreements: Service agreements levels with zone and private maintenance contracts

2.6.11 Technical requirements for RFP

On the basis of the final technical design, the consultant must detail all the requirements and technical specifications of infrastructure and service that must be demanded for the construction and implementation of the submarine cable, through an RFP.

2.7 Timeline

A timeline or schedule must be included identifying all the activities required until the submarine cable is put into operation, specifying at least the following milestones and the activities:

- a) Design
- b) Studies
- c) Obtaining permits
- d) Survey
- e) Construction
- f) Marine installation
- g) Terrestrial installation
- h) Acceptance tests
- i) Commissioning
- j) Start of service

2.8 Project Costs

The cost of the project must be presented according to the technical specifications described above. To this end, the consultant must present the same technical solution, based on products and services from a preferred supplier/provider and an alternative supplier/provider for separate evaluation.

- a) Project management cost

The builder must provide details of the design, administration, management and monitoring of the project, specifying profiles, hours

required and costs of person-hours, according to profile, throughout the life of the project.

b) Equipment costs

Include the details of all the pieces of equipment required for the proposed technical solution, identifying their respective parts, pieces or required elements. The solution must consider two alternative suppliers with the corresponding costs. Finally, the costs must include the items of the elements to be installed and the relevant spare parts. The detail must include and identify at least the following elements:

- i. Terminal Station equipment
 - a. Line terminal equipment
 - b. Administration system
 - c. Monitoring
 - d. Power equipment
 - e. Other

- ii. Terminal Station
 - a. Property or facility
 - b. Energy backup
 - c. Electrical substation
 - d. UPS (uninterruptible power supply)
 - e. Cable ducts
 - f. Safety
 - g. Air Conditioning
 - h. Other

- iii. Dry and wet plant
 - a. Optic fiber
 - b. Conductors
 - c. Earthing grids
 - d. Endpoints
 - e. Joints
 - f. BMH
 - g. Ducts
 - h. Cable (depending on type and armor)
 - i. Repeaters
 - j. BU
 - k. Other

c) Survey cost

Include the details of the survey service (route and documentation), and offer an alternative provider.

d) Installation cost

Include the detail of the installation service and offer an alternative provider.

- i. Terminal Station
 - a. Installation and commissioning of equipment
 - b. Training
 - c. Construction and civil works
 - d. Adaptation of rooms
 - e. Certifications
 - f. Other
- ii. Dry plant
 - a. Construction and civil works
 - b. Certifications
 - c. Other
- iii. Wet plant
 - a. Installation
 - b. Certifications
 - c. Other

e) Operating and maintenance cost

Include details of the most significant operating and maintenance costs of the project during its design life. Zone and private maintenance agreements costs (fixed and variables), and submarine cable repair costs.

f) Upgrades or reinvestments

According to the system's design life and demand projection, specify the investment needed to expand capacity or enhance technology infrastructure.

3 Deliverables

3.1 Report No. 1

Report No. 1 should address technological alternatives and submarine cable system technologies to introduce the main concepts (2.1 and 2.2)

On the basis of routes proposed by the consultant and agreed with the Technical Counterpart, a preliminary technical design must be prepared to determine the scope of the solution for each of them (2.3).

3.2 Report No. 2

The routes proposed in Report No. 1 will be reduced to five possible routes, defined by the Technical Counterpart. An advanced technical evaluation and a study of the associated costs will be conducted on these routes. Quotations of providers, suppliers, installation, operation and maintenance services, and every source of information used should be included (2.4 and 2.5).

The final report shall contain at least the following:

- a) Executive summary
- b) Introduction
- c) Route description
- d) Technology and design considerations
- e) Technical evaluation
- f) Associated costs
- g) Conclusions and suggestions
- h) Annexes:
 - i. Technical catalogues
 - ii. Documents, quotations, databases, and support information used
 - iii. People, companies and organizations (contact details)
 - iv. Bibliography

3.3 Final report

The final report shall be made up of the Final Technical Evaluation, timeline and cost of the project consisting of a single route defined by the Technical Counterpart (2.6, 2.7 and 2.8).

The final report shall contain at least the following:

- a) Executive summary
- b) Introduction
- c) Geological, meteorological and oceanographic characteristics, maritime activities, environmental considerations and hazards along the route
- d) Permits and regulations

- e) High-level technical design
- f) Economic evaluation
- g) Timeline
- h) Conclusions and suggestions
- i) Annexes:
 - i. Map and route description
 - ii. Tables and graphs
 - iii. Line diagrams
 - iv. Technical catalogues
 - v. Documents, quotations, databases, and support information used
 - vi. Information on geological, meteorological, oceanographic characteristics and maritime activities.
 - vii. People, companies and organizations (contact details)
 - viii. Bibliography

Chapter VI. Summary of expected products

Deliverable	Fecha	Demand 1	Demand 2 / Offer	Technical	Governance
Report No. 1	November 4, 2019	<p>Global demand potential by country.</p> <p>Disruptive demand (model companies vs. company under study).</p> <p>Autonomous demand by country.</p>	<p>Demand 2: Demand for Datacenters and new technologies.</p> <p>Demand for transit and backup.</p>	<p>Preliminary design of several routes.</p> <p>Identification of technological alternatives.</p>	<p>Study guidelines.</p> <p>Comparative Case Studies. Route Proposal.</p> <p>Telecom context and regulatory analysis of possible participating countries.</p>
		<p>Aggregation of the various sources of demand.</p> <p>Demand share (Gbps captured by the project).</p>			

Deliverable	Fecha	Demand 1	Demand 2 / Offer	Technical	Governance
Report No. 2	December 27, 2019	n.a.	<p>Offer: Global analysis of the current offer.</p> <p>Technical analysis and traffic projection in existing and projected cables.</p> <p>Study of prices and products offered.</p> <p>Proposal of price and product to offer.</p>	<p>Technical design corrected with supplier information.</p> <p>Preliminary Capex and Opex for the routes under study (indicating the margin of error).</p>	<p>PPP models.</p> <p>Business cases and evaluation of diverse routes (include commercial and administrative OPEX).</p> <p>Route proposal (best option).</p>
Final report	June 24, 2020	n.a.	n.a.	<p>Detailed engineering on selected route with information by two providers.</p> <p>Detailed Capex and Opex for the selected route (more precise estimation).</p>	<p>PPP and business case fine-tuned to selected route.</p>

**ANNEX No 1.
SUPPLIER IDENTIFICATION DATA AND SIMPLE SWORN STATEMENT
BY JURIDICAL PERSON**

Santiago,

Mrs.
Undersecretary for Telecommunications

Business Legal Name	
Trade name	
ID number of the juridical person	
Business address	
Telephone, fax number or e-mail	
Name and National ID number of legal representative	
Provider acts individually or jointly, in accordance with the provisions of Article 8 of the administrative conditions (mark with an X)	<input type="checkbox"/> Individual <input type="checkbox"/> Joint
Complete the following information if you have marked the option of bidder acting jointly	
Business legal name and/or juridical person name of each Consortium member	
Trade name (if applicable)	
Name of the common representative	
Business address	
Telephone, fax number or e-mail	

THE NAME OF THE BIDDER'S LEGAL REPRESENTATIVE

In representation of the firm:

BUSINESS LEGAL NAME	ID NUMBER

I swear under oath that the company I represent does not incur in any of the following prohibitions:

- a) Have been convicted of anti-union practices, infringement of the fundamental rights of the worker or bankruptcy offences established in the Criminal Code, within the previous two (2) years.
- b) Be a partnership of persons, which executive officers of the Ministry of Transport and Telecommunications and/or its dependent or related bodies form part of, or persons having the status of spouse, civil partner, child, adopted, or relative up to the fourth degree of kinship and second degree of affinity, inclusive, with respect to an executive of the Ministry of Transport and Telecommunications and/or its dependent or related bodies.

- c) Be a company limited by shares or a closed stock corporation of which executive officers of the Ministry of Transportation and Telecommunications and/or its dependent or related bodies are shareholders, or persons who have the status of spouse, civil partner, child, adopted, or relative up to the fourth degree of kinship and second degree of affinity, including, with respect to one of said officers.
- d) Be an open corporation in which an executive officer of the Ministry of Transportation and Telecommunications and/or its dependent or related bodies, or persons having the status of spouse, civil partner, child, adopted, or relative up to the fourth degree of kinship and second degree of affinity, inclusive, with respect to one of such officers, owns shares representing 10% or more of the capital, or managers, administrators, representatives or directors of any of the above companies.
- e) Be (i) linked to any activity in violation of: (a) any local law of any country, or any regional, supranational or community law relating to combating money laundering and preventing the financing of terrorism; and/or (b) any principle, recommendation or provision issued by the United Nations, and/or any other body dedicated to combating money laundering and preventing the financing of terrorism; and/or (ii) on any of the lists generated by or on the occasion of any of the rules, principles and/or recommendations referred to in (i) above; and/or (iii) at the sole discretion of CAF does not comply with the applicable CAF internal requirements and regulations relating to its policy on combating money laundering and preventing the financing of terrorism; and/or (iv) may not have, directly or indirectly, at the same time two service contracts financed with CAF resources, unless having the express written consent of CAF; and/or (v) any of the members of consulting firms belong, directly or indirectly, to the permanent or temporary staff of the Executor, or had belonged to it within the twelve (12) months prior to the date of submission of the contracting request. The same restriction shall apply to personnel who have belonged to CAF.

I also declare that the company I represent has not been sentenced by an enforceable judgement to any of the penalties laid down in Articles 8 and 10 of Act No. 20,393, which establishes the criminal liability of legal persons in the offences of money laundering, financing of terrorism and bribery.

SIGNATURE

ANNEX No 2.
CONSULTANT IDENTIFICATION DATA AND SIMPLE SWORN
STATEMENT BY NATURAL PERSON

Santiago,

Mrs.
Undersecretary for Telecommunications

Consultant's name	
ID number of the natural person	
Business address	
Telephone, fax number or e-mail	
Consultant acts individually or jointly, in accordance with the provisions of Article 8 of the administrative conditions (mark with an X)	<input type="checkbox"/> Individual <input type="checkbox"/> Joint
Complete the following information if you have marked the option of bidder acting jointly	
Names of the natural person of the consortium	
Name of the common representative	
Business address	
Telephone, fax number or e-mail	
Names of the natural person of the consortium	

NAMES	SURNAMES

IDENTITY NUMBER	PROFESSION OR ACTIVITY

ADDRESS

I declare under oath that I am not an officer of the Ministry of Transport and Telecommunications and/or its dependent or related bodies, nor do I have the status of spouse, civil partner, child, adopted, or relative up to and including the fourth degree of kinship and second degree of affinity with any such officer.

I also declare under oath that I am not a manager, administrator, representative or director of a partnership which includes executive officers of the Ministry of Transport and Telecommunications and/or its dependent or related bodies, or persons having the status of spouse, child, adopted, or relative up to the fourth degree of kinship and second degree of affinity, including an executive of the Ministry of Transport and Telecommunications and/or its dependent or related bodies; nor of a limited or closed joint-stock company in which executive officers of the Ministry of Transport and Telecommunications and/or its dependent or related bodies are shareholders, or persons having the status of spouse, civil partner, child, adopted, or relative up to the third degree of kinship and second degree of affinity, inclusive, with respect to one of said executives; nor of an open



corporation in which an officer of the Ministry of Transportation and Telecommunications and/or its dependent or related bodies, or persons having the status of spouse, child, adopted, or relative up to and including the fourth degree of kinship and second degree of affinity with respect to one of said officers, own shares representing 10% or more of the capital.

I declare under oath that I do not incur in any of the following prohibitions:

Be (i) linked to any activity in violation of: (a) any local law of any country, or any regional, supranational or community law relating to combating money laundering and preventing the financing of terrorism; and/or (b) any principle, recommendation or provision issued by the United Nations, and/or any other body dedicated to combating money laundering and preventing the financing of terrorism; and/or (ii) being on any of the lists generated by or on the occasion of any of the rules, principles and/or recommendations referred to in (i) above; and/or (iii) at the sole discretion of CAF does not comply with the applicable CAF internal requirements and regulations relating to its policy on combating money laundering and preventing the financing of terrorism; and/or (iv) may not have, directly or indirectly, at the same time two service contracts financed with CAF resources, unless they have the express written consent of CAF; and/or (v) any of the members of consulting firms belong, directly or indirectly, to the permanent or temporary staff of the Executor, or if they had belonged to it within the twelve (12) months prior to the date of submission of the contracting request. The same impediment will apply to personnel who have belonged to CAF.

Finally, I also declare under oath that I have not been convicted for anti-union practices, infringement of the fundamental rights of the worker or for bankruptcy offences established in the Criminal Code, within the previous two (2) years.

SIGNATURE

ANNEX No 3.
SIMPLE SWORN STATEMENT (SUBCONTRACTOR)

Santiago,

Mrs.
Undersecretary for Telecommunications

Business Legal Name	
Trade name	
ID number of the juridical person	
Business address	
Telephone, fax number or e-mail	
Name and National ID number of legal representative	
Provider acts individually or jointly, in accordance with the provisions of Article 8 of the administrative conditions (mark with an X)	<input type="checkbox"/> Individual <input type="checkbox"/> Joint
Complete the following information if you have marked the option of bidder acting jointly	
Business legal name and/or juridical person name of each Consortium member	
Trade name (if applicable)	
Name of the common representative	
Business address	
Telephone, fax number or e-mail	

THE NAME OF THE BIDDER'S LEGAL REPRESENTATIVE

--

In representation of the firm:

BUSINESS LEGAL NAME	ID NUMBER

I swear under oath that the company I represent does not incur in any of the following prohibitions:

- a) Have been convicted of anti-union practices, infringement of the fundamental rights of the worker or bankruptcy offences established in the Criminal Code, within the previous two (2) years.
- b) Be a partnership of persons of which executive officers of the Ministry of Transport and Telecommunications and/or its dependent or related bodies form part, or persons having the status of spouse, civil partner, child, adopted, or relative up to the fourth degree of kinship and second degree of affinity, inclusive, with respect to an executive of the Ministry of Transport and Telecommunications and/or its dependent or related bodies.

- c) Be a company limited by shares or a closed stock corporation in which executive officers of the Ministry of Transportation and Telecommunications and/or its dependent or related bodies are shareholders, or persons who have the status of spouse, civil partner, child, adopted, or relative up to the fourth degree of kinship and second degree of affinity, including, with respect to one of said officers.
- d) Be an open corporation in which an executive officer of the Ministry of Transportation and Telecommunications and/or its dependent or related bodies, or persons having the status of spouse, civil partner, child, adopted, or relative up to the fourth degree of kinship and second degree of affinity, inclusive, with respect to one of such officers, owns shares representing 10% or more of the capital, nor with the managers, administrators, representatives or directors of any of the above companies.
- e) Be (i) s linked to any activity in violation of: (a) any local law of any country, or any regional, supranational or community law relating to combating money laundering and preventing the financing of terrorism; and/or (b) any principle, recommendation or provision issued by the United Nations, and/or any other body dedicated to combating money laundering and preventing the financing of terrorism; and/or (ii) on any of the lists generated by or on the occasion of any of the rules, principles and/or recommendations referred to in (i) above; and/or (iii) at the sole discretion of CAF does not comply with the applicable CAF internal requirements and regulations relating to its policy on combating money laundering and preventing the financing of terrorism; and/or (iv) may not have, directly or indirectly, at the same time two service contracts financed with CAF resources, unless having the express written consent of CAF; and/or (v) any of the members of consulting firms belong, directly or indirectly, to the permanent or temporary staff of the Executor, or had belonged to it within the twelve (12) months prior to the date of submission of the contracting request. The same restriction shall apply to personnel who have belonged to CAF.

I also declare that the company I represent has not been sentenced by an enforceable judgement to any of the penalties laid down in Articles 8 and 10 of Act No. 20,393, which establishes the criminal liability of legal persons in the offences of money laundering, financing of terrorism and bribery.

SIGNATURE



ANNEX No 4.
SIMPLE SWORN STATEMENT - JURIDICAL PERSON
FULFILLMENT OF LABOR AND SOCIAL SECURITY OBLIGATIONS

Santiago,

Mrs.
Undersecretariat for Telecommunications

NAME OF THE LEGAL REPRESENTATIVE OF THE JURIDICAL PERSON

ID NUMBER	MARITAL STATUS	PROFESSION OR ACTIVITY

ADDRESS

In representation of the firm:

BUSINESS LEGAL NAME	ID NUMBER

I declare under oath that _____ **(YES/NO)** does not record unpaid balances of wages or social security contributions with its current workers or with workers hired in the past two years.

SIGNATURE



ANNEX No 5.
SIMPLE SWORN STATEMENT - NATURAL PERSON
FULFILLMENT OF LABOR AND SOCIAL SECURITY OBLIGATIONS

Santiago,

Mrs.
 Undersecretariat for Telecommunications

NAMES	SURNAMES

ID NUMBER	MARITAL STATUS	PROFESSION OR ACTIVITY

ADDRESS

I declare under oath that _____ **(YES/NO)** does not record unpaid balances of wages or social security contributions with its current workers or with workers hired in the past two years.

 SIGNATURE

ANNEX No 6.
ECONOMIC OFFER

Amount Offered in (USD)	
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Delivery times (calendar days)	
Report No. 1	
Report No. 2 (*)	
Final Report (*)	
Total (**)	

(*) Counted from delivery of the previous report.

(**) Sum of all delivery times.

ANNEX No 7.
EXPERIENCE OF THE MEMBERS OF THE WORK TEAM

a) Experience of the consultants that form part of the work team to be assigned to the execution of the service which is the object of this bidding process, in matters related to:

1. Knowledge or at least one experience in economic impact studies of: ICT policies and/or digital gap, and/or public policy strategy in telecommunications and/or evaluation of ICT projects;
2. Knowledge or at least experience in studies of economic characterization of the telecommunications industry, in topics such as: investment levels, operating conditions and international service;
3. Knowledge or at least experience in studies of industrial organization of the transport market and services, intermediate and final Telecommunications, in particular Submarine FO;
4. Knowledge or at least one experience in studies that analyze the development and evaluation of projects related to Submarine FO;
5. Knowledge or at least one experience in studies and/or projects of public and private telecommunications in Chile or abroad;
6. Knowledge or at least one experience in dimensioning and designing Submarine FO networks;
7. Knowledge or at least one experience in network planning and projection of technological changes associated with the convergence of services expected for the industry in the medium term;
8. Knowledge or at least experience in the preparation of detailed technical specifications for the implementation of Submarine FO Networks.

Name of the consultant	Name of the activity, project or consultancy	Start date (month and year)	End date (month and year)	Description of the project or consultancy and of the work carried out by the consultant	Contracting organization and contact details that can serve as a reference	Description of the activity carried out by the consultant

b) Experience of the Project Leader of the work team to be assigned to the execution of the service object of this bidding process, in matters related to:

1. At least one experience in submarine fiber optical network market research projects;
2. At least one experience in characterization and demand analysis of existing commercial Submarine fiber optical networks;
3. At least one experience in network planning and projection of technological changes associated with the convergence of services expected for the industry in the medium and long terms;
4. Have worked in the telecommunications industry, preferably in Submarine FO services;
5. Studies and/or projects in public and private telecommunications in Chile or abroad;
6. Studies on effects on the industry associated with the introduction of projects of legal modifications, analysis of possible litigations and anticipation of mitigation mechanisms;
7. Economic impact studies of: ICT policies and/or digital gap, and/or public policy strategy in telecommunications and/or evaluation of ICT projects;
8. Studies of economic characterization of the telecommunications industry, in topics such as: investment levels, operating conditions and service in the Chilean territory;
9. Managerial position in projects in any of the above areas.

Name of the activity, project or consultancy	Start date (month and year)	End date (month and year)	Description of the activity, project or consultancy and of the work carried out by the Project Manager	Contracting organization and contact details that may serve as a reference

Bidders must complete this annex and accompany it with their Technical Specifications; otherwise their proposals will be declared inadmissible.

ANNEX No 8.
EXPERIENCE OF THE BIDDER (NATURAL OR JURIDICAL PERSON) IN THE EXECUTION OF PROJECTS WITH SIMILAR CHARACTERISTICS

Proven experience of the bidder on studies developed that are similar to those described in the Technical Specifications (Evaluation Criterion No. 2).

Name of the Consultancy	Start date	End date	Field which the consultancy refers to	Public or private entity that contracted it	Contact details	Brief description of the work carried out

Bidders must use the format defined in these Annexes and attach it to their Technical Offer Specifications in an Excel file, otherwise their proposals will be declared inadmissible.