



**INTERNATIONAL CALL FOR ENERGY STORAGE CTG
BRASIL - SENAI
LARGE SCALE ENERGY STORAGE FOR A LOW
CARBON ECONOMY – version 4¹**

Public Call 2022

¹ Version 2 - updated on June 23, 2022 to include that the videos and submission documents must be in English in items 8.3 and 8.6 and include the guidelines for completing the Project Canvas in Appendix 3. Alteration of the deadline to send the Submission Form from 01/07 to 22/07.

Version 3 - updated on July 05, 2022 to exclude the limitation of up to 5 projects per Senai Proponent Institute in item 8.3.

Version 4 - updated on August 12 to extend by one week the deadline for announcing qualified proposals and subsequent phases

INTERNATIONAL CALL FOR ENERGY STORAGE CTG BRASIL - SENAI LARGE SCALE ENERGY STORAGE FOR A LOW CARBON ECONOMY

1. GENERAL ASPECTS

China Three Gorges Corporation (CTG) has chosen Brazil as a priority country in its international growth strategy. Since it arrived in the country in 2013, it has established strategic partnerships with companies that are well known in the sector and have a strong local presence. To grow sustainably, CTG Brasil has been expanding its investments to become an increasingly relevant clean energy company. Currently, it is the second largest energy generator in the country, with private capital. The company relies on the dedication of its team of local talents and is guided by its commitment to make joint efforts to contribute to the Brazilian energy matrix in the long term, with social responsibility and respect for the environment.

CTG Brasil aims to offer new services from new large-scale Energy Storage solutions for a low-carbon economy, in partnership with other companies and science and technology institutions that have the same interest, sharing resources and optimizing efforts to implement relevant Research, Development and Innovation - R&D+I projects that can create and shape markets.

A second objective of CTG Brasil is to promote the acceleration of technological routes and the sharing of knowledge and experiences with international partners, especially with countries that have relevant experience in the subject.

Finally, it is important to mention that this call incorporates the Stage Gate Process into its project evaluation and execution. A greater contextualization of CTG Brasil's strategy is presented in each of the challenges of this Call (item 4).

The selection of projects will consider CTG Brasil's interests in connecting with players that occupy different positions in the business value chain, contribute to the revision of the status of storage in regulatory frameworks as a generation asset, expand the role of storage in auxiliary services and flexibility markets, prioritize the most accessible applications, select proposals with higher ROI - Return on Investment, among other items of technological valuation as brand, reputation, intellectual property, academic production, etc, in addition to the economic counterpart and other financing mechanisms in order to share/mitigate risks and increase the relevance and attractiveness of the solutions.

2. CALL GOVERNANCE

Role	Functions	Who
Coordinating Institute	General Call Coordinator	ISI Eletroquímica
Organizing Committee	Call dissemination, submission support and organization of the proposal selection process	Senai DR Paraná Habitat Senai Paraná
Evaluation Committee	Experts invited to evaluate proposals	Ad Hoc Consultants CTG team

Portfolio Committee	Carry out the Curation including the vision of the Project Portfolio and identifying synergies between the approved proposals.	Ad Hoc Consultants CTG team
----------------------------	--	--

3. TARGET AUDIENCE

This public call is a national instrument destined to SENAI Innovation Institutes, which must be the Proposers and responsible for the execution of the approved proposals.

SENAI Innovation Institutes can identify coexecutors with the following partner profiles:

- SENAI Institutes of Technology
- Institutes of Science and Technology, public or private
- Companies in the Energy Sector Value Chain
- Small and Medium Enterprises
- Startups and Technology-Based Companies
- Development Agencies

The co-executors must jointly sign the Cooperation Agreement.

The existence of International Companies as partners in the Proposal is not a requirement, but given the global competitiveness of the sector, they may participate in the proposal. The formalization of this partnership will be by means of a Partnership Statement or Memorandum of Understanding (MoU).

4. THEMATIC CHALLENGES

Proposals must meet one of the Challenges described below. CTG Brasil may approve more than one proposal per Challenge or fail to approve a proposal for any Challenge, according to its assessment of commercial gains.

- **CHALLENGE 1: Integrated Storage System with solar, wind and hybrid plant..**

Description: Storage systems integrated with renewable energy sources are a trend in the market, both for strategic and future mandatory demands. Consequently, CTG must update and develop expertise in this area.

The direct integration of batteries with renewable generation plants can bring benefits in stabilizing generation in the short term or providing services that the generating source alone would not be able to provide.

The need for controllable supplies, or even the possibility of having more constant production, can lead to solutions where batteries would be directly associated with intermittent renewable power plants such as wind and solar. In some markets, for example, the use of technologies capable of storing energy to smooth renewable generation ramps is mandatory to meet local grid requirements, and may be something to be mandatory in the future in Brazil as well.

Another possibility is to use the excess energy produced by photovoltaic plants, for example, when it cannot be converted to alternating current (AC) at certain times when the continuous current (DC) generation capacity is greater than the conversion capacity of the inverters. The installation of batteries on the DC side would allow the energy that would initially be wasted to be stored, for later injection into the grid.

Similarly, in an eventual deployment of hybrid wind-photovoltaic plants, as discussed in Technical Note EPE-DEE-NT-029/2019 (EPE, 2019), batteries could be used to store the outage that would occur due to lack of flow capacity in relation to the total power of the hybrid plant, depending on an economic-financial optimization.

Thus, evaluating the storage system trend with solar and wind technologies is important for operational excellence and sustainable growth of CTG's Renewables projects, while also providing new business model possibilities.

Requirements: Subjects must submit a work plan, according to the template Annex 2 - Work Plan, considering aspects of development, computational modeling and experimental analysis on an integrated solar energy + storage pilot plant using viable technologies for storage with capacities between 25 kWh and 80 MWh.

- **CHALLENGE 2: Technologies for energy management, control, and commercialization.**

Description: The Brazilian energy matrix is changing and is becoming increasingly diverse, decentralized and renewable, reducing the distance between generation and final consumer. This requires new solutions for management and control, both of the Electrochemical Storage and the generating sources, in order to ensure the supply of energy in a safe, sustainable and affordable way. Moreover, in this new scenario, consumers may become energy producers/stockers, which opens space for new models of product commercialization, requiring new solutions that must manage both the loading and the supply of energy.

In general, treated with an eye to the electricity sector, due to the inductive role of energy distributors in their concession areas, we can cite electromobility as an example that brings with it the necessary interoperability of stations and recharging (reference: Aneel Normative Resolution No. 1000/2021) so that the information can be understood and taken into account by the energy management, control, and commercialization systems.

Requirements: Subjects must submit a work plan, according to the model Annex 2 - Work Plan, with feasible technologies for management, control and commercialization of energy with power between 5 kW and 80 MW.

- **CHALLENGE 3: Battery Recycling and Reuse.**

Description: The demand for energy accumulators is growing exponentially, especially for Li ion batteries. However, with regard to this chemistry, the processes for recycling batteries are not yet well established.

To enable the large-scale use of batteries, both from an environmental and economic point of view, the recycling of materials is fundamental, since the extraction and processing of ores is very costly and polluting. Another important strategy in this scenario is the reuse of batteries (second life) at the end of their useful life in electromobility. Even though the batteries no longer perform in electric vehicles, they can still be used in stationary storage systems, because the energy requirements are lower. Only at the end of the second life, which can be up to 15 years, would the battery be directed to recycling.

Requirements: The subjects must submit a business plan, according to the model Annex 2 - Work Plan, with viable technologies for recycling and reuse of Electrochemical Storage between 1 MWh and 80 MWh.

5. FINANCIAL RESOURCES

In this joint call between CTG and Senai Nacional, up to BRL 24,000,000.00 (Twenty-four million reais) will be made available, consisting of:

FINANCIAL RESOURCES		ECONOMIC RESOURCE	TOTAL RESOURCES
CTG	Plataforma da Inovação para Indústria (SENAI DN)	SENAI DR (Instituto Executor)	
Up to R\$20 million	R\$ 2 millions	R\$ 2 millions	R\$ 24 millions

It will be at the discretion of the CTG (Proponent Industry) to define the number of projects to be selected per challenge.

The funds contributed by Senai DN will be used exclusively for the execution of projects with the Senai Institutes of Technology and Innovation Network, according to the rules of the Industry Innovation Platform.

There will be no transfer of financial resources, coming from Senai DN or SENAI DR (Executing Institute), directly to the Proposing Industry and/or to Participating Companies.

In case of remaining resources, at the discretion of the organizing committee, these may be made available for the contracted projects.

Although not mandatory, it is desirable that companies and/or their partners contribute financial resources to the project, complementing the amounts that will be contributed by CTG, SENAI DN and SENAI DR from the State of the ISI Executor contemplated in the call.

The maximum value of the proposals cannot exceed R\$24 million

6. CHARACTERISTICS OF THE PROPOSALS

About TRL

Proposals must fall within levels 4 to 9 of the Technological Readiness Index scale.

Table 1: Classification of the Technological Readiness Index (TRL)

INDEX	CHARACTERISTICS
1	Basic principles observed and reported
2	Concept and/or application of the technology formulated
3	Analytical and experimental proof of concept of the critical function and/or characteristic
4	Functional verification in a laboratory environment of the component and/or mock-up
5	Verification in the relevant environment of the critical function of the component and/or mock-up
6	Model demonstrating the critical functions of the element in a relevant environment
7	Model demonstrating the performance of the element in an operational environment
8	Complete real system , accepted and qualified to operate
9	Real system in successful operation : mature technology in a real, successful operating environment.

Source: ABNT NBR ISO 16290:2015

About the scope of proposals

The definition of the proposal scope must contemplate the project execution in 2 phases, once the present Call

adopts the *Stage Gate*² Process. The definition of the Gate or Decision Gate is of the proposing Senai Institute, as well as the expected results for phase 1 of the project.

The approval of the proposals and the signature of the Technical Cooperation Agreement will contemplate the total budget for the proposal (Phases 1 and 2), but the liberation for phase 2 will depend on the results presented in Phase 1, according to CTG Brasil's evaluation..

About the execution time of the Projects

The project execution period should be up to 36 months, divided into Phase 1 up to 18 months and Phase 2 up to another 18 months.

About the Project Budget

The budget should follow the headings as specified in the general regulation of the Innovation Platform for Industry, available at: <https://www.portaldaindustria.com.br/canais/plataforma-inovacao-para-a-industria/categorias/missao-industrial/>

7. CALL SCHEDULE

Stage		Responsible	deadlines
1	Call Launch	Organizing Committee	25/05/2022
2	Availability of the Submission Form	Organizing Committee	30/05/2022
3	Final date for sending the Submission Form	Proposing Institute	22/07/2022
4	Concept Clarification Interviews	Organizing Committee and Proposing Institute	25/07 a 05/08/2022
5	Disclosure of Eligible Proposals	Organizing Committee	19/08/2022
6	Final date for submission of Work Plans	Proposing Institute	16/09/2022
7	Oral Presentation Bank	Organizing Committee and Proposing Institute	26/09 to 30/09/2022
8	Disclosure of selected Proposals	Organizing Committee	21/10/2022
9	Signing of Cooperation Agreements	Organizing Committee and Proposing Institute	24/10 to 25/11/2022
10	Phase 1 to Phase 2 transition gate	Organizing Committee and Proposing Institute	12th to 18th month of projects

8. CALL OPERATIONAL FRAMEWORK (Phases, Forms and Documents).

² Project Management Technique in which the initiative is divided into distinct stages, separated by decision points (known as "Gate").

8.1 Call Launch

8.2 Availability of Submission Forms

All information about this call is available on the Call page, and links for proposal submission, should be accessed through the site is: <https://www.senaipr.org.br/chamadactgbrasil>.

8.3 Submission of the Proposal Form

The proposals must be submitted initially by filling out the registration form available on the Subscribe button at <http://senaipr.org.br/chamadactgbrasil>. In addition to filling out the information on the form, the following must be attached:

- Project Canvas in PDF according to the model provided in Annex 3 of this call for proposals;
- Mini Resume of the main members of the project team;
- Link of the Video Pitch with up to 5 minutes.

All information in the form, attached documents and video must be in English.

There is no limit to the number of proposals that the Senai Institute of Innovation can submit for any of the Call's challenges. There is also no restriction on the number of proposals that the Senai Institute can participate as a Partner Institute in projects of another Senai Institute.

8.4 Submission Form Clarification Interviews

This phase is intended to collect clarifications of the information submitted in the Project Canvas and Pitch. Each proposing institute will be invited for a 15-30 minute engagement.

8.5 Disclosure of Qualified Proposals

The selection criteria for the Proposals, in this initial stage are:

CRITERIA		Nota
1	Adherence to Call Challenges	0 a 2
2	Concept Outcome Potential	0 a 3
3	Profile of the Responsible for the Proposal (Senai Institute and Partners)	0 a 3
4	Qualification of the Partners that will compose the Industrial Mission	0 a 2

It will be at the discretion of CTG Brasil to define the number of proposals qualified for the Work Plan phase.

8.6 Work Plan Submission

The Senai Institutes with qualified proposals must send the following documents, according to the templates described in the attachments to the call for proposals.

- Letter of Intent (attachment 1)
- Work Plan (attachment 2)

All information in the documents must be in English.

8.7 Oral Presentation Board

The Work Plan should be presented either remotely or in person in São Paulo. Each Proponent should prepare a 30-minute presentation document and participate in a 30-minute Q&A session.

8.8 Disclosure of approved Work Plans

The evaluation of the Project Proposals will be according to the guidelines contained in ANEEL's **Procedures for the Research and Development Program - Prop&D³**. The merits of each proposal will be analyzed according to the criteria defined in the table below:

Order	Evaluation Criteria	Result
1	Application in CTG Brasil Business Unit	N1
2	Project Execution and Applicability	N2
3	Coherence: Scope, Methodology, and Timeline	N3
4	Market Coverage	N4
5	Originality and Innovation Potential	N5
6	Technical Capacity	N6
7	Reasonableness of Costs	N7
Final Result (RF)		$(N1+N2+N3+N4+N5+N6+N7)/7$

The list of selected proposals will be posted on the Call's website, on the Industry Innovation Platform website, and the Proposing Institute will receive the approval email.

8.9 Signing of the Cooperation Agreements

In this phase the SENAI Institute that coordinates the Call, in partnership with the CTG Brasil and the SENAI National Department, will curate the Project proposals presented, identifying synergies between them and submitting them to the CTG Brasil for final approval.

Documents to be submitted:

- Technical and Financial Cooperation Agreement as per the draft presented in Annex 3 made available

³ Available at: [Erro! A referência de hiperlink não é válida.](#)

by Senai PR.

- Final Version of the Work Plan.

The documents must be signed within 30 days of the announcement of the result. In exceptional cases, this deadline may be extended upon request to the Organizing Committee.

8.10 Phase 1 to Phase 2 transition gate

The projects will have an evaluation at month 18, in which the intermediate objectives defined in the Proposal will be evaluated by CTG Brasil.

9. ACCOUNTABILITY

All parties must account for the resources of this Call, according to the present rules and must follow the general regulation of the Innovation Platform for Industry, available at: <https://www.portaldaindustria.com.br>.

The accountability of the projects will be the responsibility of Senai's Regional Department to which Senai Innovation Institute is linked.

10. INTELLECTUAL PROPERTY AND ROYALTIES

The decisions of co-authorship and royalties in eventual registrations of patents, industrial designs, or any other result of the projects executed by the Alliances approved in this Industrial Mission, must follow the proportionality of the investments made by the parties or other reason, since previously negotiated between the parties. The costs of the IP process may be foreseen in the Project.

11. GENERAL PROVISIONS

The parties involved are responsible for the authenticity of the information submitted, agreeing to make the information available exclusively to the partners of the call and agree to keep confidential all information handled between the parties. It is the responsibility of the proponents to adopt all measures that involve special permissions and authorizations for project execution and solution implementation. In the scope of this call, no legal link will be established, whether of investment promise, employment and/or social security nature between the participating entities.

In case of interest in discontinuing their participation in the Call, the project leaders should formally communicate their decision to SENAI DN, giving up immediately the benefits of the Call.

This Tender Protocol may be cancelled, totally or partially, at the discretion of CTG Brasil, SENAI DN and SENAI PR. Companies submitting their projects will not be entitled to any compensation as a result of the cancellation of this Call.

By applying to this call, in any of the stages, the parties involved agree with its rules.

Eventual doubts and clarifications can be found in the General Regulation, Industrial Mission 2022 Category, available at:

https://static.portaldaindustria.com.br/media/filer_public/73/b7/73b730f5-cf7b-4ce9-88c6-fb7e742a6b6c/plataforma_inovacao_2022_31032022_errata_08042022_1.pdf.

Clarifications and additional information can be sent via message to the e-mail address: habitat@sistemafiep.org.br.

ANNEX 1 - LETTER OF INTENT INDUSTRIAL MISSION

CITY, DATE
STATE

TO THE COORDINATION OF THE INNOVATION PLATFORM FOR INDUSTRY

I, FULL NAME, RG _____ CPF _____, SENAI INNOVATION INSTITUTE REPRESENTATIVE _____ CNPJ _____ I HEREBY EXPRESS MY INTENTION THAT THE AFOREMENTIONED INSTITUTE PARTICIPATE IN THE INNOVATION PLATFORM FOR INDUSTRY AS THE PROPONENT OF THE PROJECT PROPOSAL ENTITLED _____, WITH THE INTENTION OF DEVELOPING R&D PROJECTS TOGETHER WITH CTG BRAZIL.

Option 1 - proposal submitted by only one SENAI Innovation Institute:

THIS PROPOSAL HAS A TOTAL VALUE OF R\$ _____, BEING R\$ _____ OF RESOURCES REQUESTED FROM THE PLATFORM, R\$ _____ OF ECONOMIC COUNTERPART CONTRIBUTED BY SENAI REGIONAL DEPARTMENT OF THE PROPONENT INSTITUTE.

Option 2 - proposal presented by a SENAI Innovation Institute and one or more partners:

THIS PROPOSAL HAS A TOTAL VALUE OF R\$ _____, BEING R\$ _____ OF RESOURCES REQUESTED FROM THE PLATFORM, R\$ _____ OF ECONOMIC COUNTERPART CONTRIBUTED BY SENAI REGIONAL DEPARTMENT OF THE PROPONENT INSTITUTE, AND R\$ _____ COUNTERPART FROM OTHER PARTNERS.

THE FIRST PARTNER INSTITUTION OF THIS PROPOSAL:

WILL CONTRIBUTE R\$ _____ OF COUNTERPART RESOURCES, BEING R\$ _____ OF FINANCIAL COUNTERPART AND R\$ _____ OF ECONOMIC COUNTERPART.

THE SECOND PARTNER INSTITUTION OF THIS PROPOSAL (IF ANY):

WILL CONTRIBUTE R\$ _____ OF COUNTERPART RESOURCES, BEING R\$ _____ OF FINANCIAL COUNTERPART AND R\$ _____ OF ECONOMIC COUNTERPART.

THE THIRD PARTNER INSTITUTION OF THIS PROPOSAL (IF ANY):

WILL CONTRIBUTE R\$ _____ OF COUNTERPART RESOURCES, BEING R\$ _____ OF FINANCIAL COUNTERPART AND R\$ _____ OF ECONOMIC COUNTERPART.

We are aware of the **rules for participation in the International Call for CTG Brazil Energy Storage - SENAI** and have read the rules available at senaipr.org.br/chamadaCTGbrasil.

City, date of signature

Name of the representative of SENAI Institute of Innovation Proponent

Name of Other Partners' representative (if any)
Job Position

Name of Other Partners' representative (if any)
Job Position

Name of Other Partners' representative (if any)
Job Position

ANNEX 2 - WORK PLAN

1. REGISTER DATA OF THE PROPONENT

1.1 Proponent Company					
Corporate Name:					
CNPJ					
Address:					
Neighborhood:					
City:				FU:	
CEP:		Phone:	()	Email:	
Size	() Micro () Pequena () Média () Grande () Startup				
1.2 Company Officer Data					
Name:					
Position:		CPF:			
RG:		Issuing Agency:			
Email:		Phone:	()		
1.3 Coordinator					
Name:					
Position:		CPF:			
RG:		Issuing Agency:			
Email:		Phone:			
1.4 Company History:					
1.5 R&D History:					

1.6 Infrastructure Available to Support Project Development:

2.

2 EXECUTING ISI DATA

2.1 Unit Data			
Regional Department			
Corporate Name			
CNPJ		Phone:	()
2.2 Director's details			
Name:			
Position:		CPF:	
RG:		Issuing Agency:	
Email:		Telephone:	()
2.3 Data from the Lead Researcher			
Nome:			
Cargo:		CPF:	
RG:		Issuing Agency:	
Email:		Phone:	()

3. PROJECT DATA

3.1 Project Description	
3.1.1	Project Title
3.1.2	Description of the Solution Oriented to the Challenges Proposed in the Mission
<i>Present which solution(s) your project proposes to meet the challenges proposed in this Mission.</i>	
3.1.3	Description of the Technology to be Developed
<i>Describe the technology to be developed, indicating the current status of development, the technological challenge to be overcome, and the expected future status, after completion of the proposed Project, indicating, in an objective manner, which technological barriers prevent the future status from being available yet.</i>	
3.1.4	Solution Originality Description
<i>Originality is the quality of what is different or new. In the context of this Call, an original project is one that is innovative and/or presents contributions to the state of the art in science and technology. To be original, a project must result in the creation and/or the improvement of equipment, processes, methodologies, and techniques.</i>	
3.1.5	Solution Applicability Description
<i>Applicability is the characteristic of what can be applied, used, put into practice, cause an effect. The applicability assesses the potential application of the product or technique developed, based on the scope and functionality tests, with reference to the stage of the innovation chain of research and possible restrictions on use.</i>	
3.1.6	Solution Relevance Description
<i>Relevance considers the importance of the project's results. For the purposes of this call, the contributions and impacts of the project in economic, technological, scientific, and socio-environmental terms, including all its results, will be considered.</i>	

3.1.7 Description of Realized Investments

Indicate, in an objective way, which are the main investments to be made, highlighting the importance of each one, emphasizing the reasonability of its execution

3.2 Expected Results of the Proposed Solution/Project

3.3 Developments/Next Steps after Completion of the Proposed Project

3.4 Human Capital

Description of the Human Capital involved in the proposal (people, professional and academic experience, among other relevant information)

3.5 Contributions of the Project to CTG Brasil

Description of how this project is disruptive and can generate value, new business models and opportunities for CTG Brasil

3.6 Physical Schedule

Item

Steps and Activities

**Start
(Month/Year)**

**End
(Month/Year)**

[1]	Stage 01 -		
[1. 1]			
[1. 2]			
[1. 3]			
[2]	Stage 02 -		
[2. 1]			
[2. 2]			
[2. 3]			
[3]	Stage 03 -		
[3. 1]			
[3. 2]			
[3. 3]			
[n]	Stage n -		
[n. 1]			
[n. 2]			
[n. 3]			

3.7 Application Plan

N	Expense Element	Item Summary Description	Unit	Qty	Unit Value	Total Value
(e.g.)	Consumption Material (National)	Filter element for equipment XYZ, ref. 5834	Part	10	553,00	5.530,00
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
(...)						
n.						
SUMMARY						

Available Expenditure Elements:



// PLATAFORMA INOVAÇÃO PARA A INDÚSTRIA //

CURRENT EXPENSES		DESPESAS DE CAPITAL
1. Personnel and Social Charges	6. Consumable Material (Desp. Acess. Import)	1. Equip. Perm. mat. (Desp. Acess. Import.)
2. Daily rates	7. Third-Party Services (PF)	2. Tickets and Travel Expenses
3. Tickets and Travel Expenses	8. Third-Party Services (PJ)	3. Third-Party Services (PF)
4. Consumption Material (National)	9. Other Current Expenses	4. Construction and Facilities
5. Consumable Material (Imported)		5. Other Capital Expenditures



3.8 Table of Uses and Sources

Expense Group/Element	Economic Subsidy	Counterpart of the Proponent Company	ISI Counterpart Executor	TOTAL
CURRENT EXPENSES				
Personnel and Social Charges				
Daily rates				
Tickets and Travel Expenses				
Consumption Material (National)				
Consumable Material (Imported)				
Consumption Material (Disp. Access. Import.)				
Third-Party Services (PF)				
Third-Party Services (PJ)				
Other Current Expenses				
CAPITAL EXPENSES				
Works and Installations				
Equip. Matt. perm. (National)				
Equip. Matt. perm. (Imported)				
Equip. Matt. perm. (Access. Import.)				
Other Capital Expenditures				
TOTAL				

3.9 Disbursement Schedule

Period	Economic Subsidy	Counterpart of the Proponent Company	ISI Counterpart Executor	Total
Year 1				
Year 2				
Year 3				
Year 4				
TOTAL				

3.10 Repassing Schedule

Parcel	Date (Month/Year)	Economic / Mission Grant H ₂ Green	Counterpart of the Proponent Company	ISI Counterpart Executor	Total
Share 1					
Share 2					
Share 3					
(...)					
Share n					
TOTAL					

3.11 ACCOUNTABILITY SCHEDULE

// PLATAFORMA INOVAÇÃO PARA A INDÚSTRIA //



Year 1
(Month/Year)

Year 2
(Month/Year)

Year 3
(Month/Year)

Year 4
(Month/Year)



PELO FUTURO DO TRABALHO

ANNEX 3 – PROJECT CANVAS

The boxes highlighted with a red X (Technical leader statement and Technical leader) should not be filled out, because they will be filled out by CTG Brasil in the evaluation stage.

Project:

<p>Motivation</p> <p>Report unmet needs, problems, deficiencies, improvement points, challenges in which this project proposal intend to focus its efforts.</p>	<p>Originality</p> <p>Describe the originality of this project. In order to do so, highlight how this project will differ from the state-of-the-art and describe the possible advances in scientific and technological spheres.</p>	<p>Expected Benefits</p> <p>Detail gains, cost reduction or efficiency increase, quality improvement or offer of new services.</p> <p>Reduction of operational costs R\$:</p> <p>Increases reliability/availability</p> <p>Increases security/safety</p> <p>Increases revenue</p> <p>Improves models for resource prediction</p> <p>Others</p>	<p>Technical leader statement</p> <p>Relevance to CTG Brasil</p> <p>Post-Project For CTG BR</p>	<p>Risks and Mitigation Approaches</p> <p>Describe the risk factors that could compromise the execution or implementation of the proposed project.</p> <p>Technical</p> <p>Present the intrinsic risks of the technique, risks associated with its execution and how the research team plans to circumvent these problems.</p> <p>Schedule</p> <p>present the risks associated with the development time, completion of phases, delivery and validation of products, purchase.</p> <p>Investments</p> <p>Describe the risk factors regarding the requested investment. For example: changes in previous budget due to exchange rate</p>
<p>Objective</p> <p>In light of the "Motivation", explain the main objective of this project and which partial objectives must be met to achieve it.</p>	<p>Stakeholders</p> <p>External</p> <p>Other companies, institutions, economy sectors and etc.</p> <p>Internal</p> <p>CTG Br internal areas</p>		<p>Applicability</p> <p>Present which results and products could be applied in the electric sector, other economic sector or countries, or that may provide assistance to develop a new technological route. Also, explain how.</p> <p>Electric power sector Other sectors and countries New technological routes Functionality Test</p>	
<p>Product</p> <p>List and detail the products types that will be delivered at the end of the project.</p>	<p>Timeline</p> <p>Present a timeline with the project stages and which TRL it starts and finish.</p>	<p>Financial</p> <p>Total</p> <p>How much this project will cost?</p> <p>Financial return</p> <p>Present at least one of the following Indicators Economic Viability Study (EVS): Payback Time, Internal Rate of Return (IRR) or Net Present Value (NPV).</p> <p>Post-Project Resources</p> <p>After project conclusion, there will be necessary any maintenance costs?</p>		<p>Technical leader</p> <p>For CTG BR</p>

<p>Prior-art</p> <p>List examples of researches identified in the prior art analysis that have correlation with the activities and study proposes for this project.</p>	<p>Team</p> <p>Technical Capability</p> <p>Describe the team qualifications. How many members will the project have? Include the area of knowledge and degree and if the team has been involved in other projects with similar scope.</p> <p>Qualification</p> <p>Present a plan for personnel development. Include the name and institution, research area.</p> <ol style="list-style-type: none"> 1. Post-Doctorate; 2. PhD; 3. Master's degree; 4. Specializations. <p>Training and courses are also considered.</p> <p>CTG Brasil Involvement</p> <p>Present which CTG BR employees can be involved or areas. In addition, indicate if it is necessary to carry out any activity within the company's premises (office or power plants).</p>	<p>Technical-Scientific Production</p> <p>Academic Productions</p> <p>Present a plan containing:</p> <ol style="list-style-type: none"> 1. Papers that may be written and in which journals they could be submitted; 2. Scientific congresses and events; 3. Books or book chapter; <p>Intellectual Property</p> <p>Present a plan for intellectual property protection. There will be submission of Invention Patent (IP), Utility Model Patent (UM), Brand register, Computer program register and etc. Where this documents will be submitted?</p> <p>Awards</p> <p>Are there any national or international awards for which the project can be submitted?</p> <p>Technological Transfer</p> <p>Present a plan containing the strategy for technology transfer and diffusion, highlighting possible events (symposiums, workshops, trainings, lectures, etc.) to promote discussion and exchange of academic and technical knowledge.</p>
<p>International Cooperation</p> <p>There will be an international partnerships with institutions/industries in China, Europe, the United States, etc? If so, present the partners, the reason for carrying out this partnership and how it will influence the development of the project.</p>		
<p>Financial</p> <p>Cost Reasonability</p> <p>The costs herein presented are in line with the market average? Justify the relevance of investments being requested in the project proposal versus the comparison with the benefits/impacts described.</p> <p>Financing</p> <p>Besides P&D ANEEL, there will be another type of financing? EMBRAPPII, BNDES, FINEP for example. There will be investment from other institutions?</p>		<p>Socio-Environmental Relevance</p> <p>Social Impacts</p> <p>Qualitatively describe the socio-environmental contributions and impacts arising from the project. In addition, describe how these impacts are intended to be quantified (parameter or targeting).</p> <p>Environmental Impacts</p>