CTG Brasil

INTERNATIONAL CALL FOR ENERGY STORAGE CTG BRASIL - SENAI

LARGE SCALE ENERGY STORAGE FOR A LOW CARBON ECONOMY – version 7[1]

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
Version 5 - updated on August 23, orienting that the phase 6 documents (letter of intent and work plan) must be submitted in Portuguese and English
Version 6 - updated on October 21st to change the schedule in item 7 and include the steps of Disclosure of Preliminary Results, Evaluation of documents and videos from the virtual work plan panels by the CTG Board of Directors, Individual negotiation with institutes for possible budget and scope revisions, and Disclosure of Definitive Results and selected proposals.
Version 7 - updated on December 20 to change the schedule in item 7, postponing the deadline for the "Announcement of Final Results and selected proposals" phase from December to January, and for the "Signing of Cooperation Agreements" phase from January 2023 to February 2023.
Version 8 - updated on January 19 to change the schedule in item 7, postponing the deadline for the "Announcement of Final Results and selected proposals" phase from January to February, and for the "Signing of Cooperation Agreements" phase from February 2023 to March 2023.

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	Divulgation of Preliminary Results	Divulgation of Preliminary Results	21/10/2022
9	Evaluation of the work plan documents and videos by the CTG Board of Directors	Organizing Committee	Expected in November

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

10	Individual negotiation with institutes for possible budget and scope revisions	Organizing Committee	Expected to November
11	Announcement of Definitive Result and selected proposals	Organizing Committee and Nominating Institute	Expected in February 2023
12	Signing of the Cooperation Agreements	Organizing Committee	Expected for March 2023
13	Transition Gate Phase 1 to Phase 2	Organizing Committee and Nominating Institute	12th to 18th Month of projects

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

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 in portuguese (attachment 1)
- Letter of Intent in english (attachment 2)
- Work Plan in portuguese (attachment 3)
- Work Plan in english (attachment 4)

All documents must be sent in two versions, one in Portuguese and one 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&D**[3]. 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

[3] Avaiable at: **Erro! A referência de hiperlink não é válida.**

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 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 (PORTUGUESE)

CIDADE, DATA
UF

À COORDENAÇÃO DO PLATAFORMA INOVAÇÃO PARA A INDÚSTRIA

EU, NOME COMPLETO, RG _____CPF _____ , REPRESENTANTE DO INSTITUTO SENAI DE INOVAÇÃO _____ CNPJ _____ VENHO POR MEIO DESTA, MANIFESTAR A INTENÇÃO DE QUE O INSTITUTO ANTERIORMENTE CITADO PARTICIPE DO PLATAFORMA INOVAÇÃO PARA A INDÚSTRIA COMO PROPONENTE DA PROPOSTA DE PROJETO INTITULADA _____ , COM A INTENÇÃO DE DESENVOLVER PROJETOS DE P&D EM CONJUNTO COM A CTG BRASIL.

Opção 1 – proposta apresentada apenas por um Instituto Senai de Inovação:
ESTA PROPOSTA APRESENTA O VALOR TOTAL DE R$_____, SENDO R$_____ DE RECURSOS SOLICITADOS À PLATAFORMA, R$_____ DE CONTRAPARTIDA ECONÔMICA APORTADA PELO SENAI DEPARTAMENTO REGIONAL DO INSTITUTO PROPONENTE.

Opção 2 – proposta apresentada por um Instituto Senai de Inovação e um ou mais parceiros:
ESTA PROPOSTA APRESENTA O VALOR TOTAL DE R$_____, SENDO R$_____ DE RECURSOS SOLICITADOS À PLATAFORMA, R$_____ DE CONTRAPARTIDA ECONÔMICA APORTADO PELO SENAI

DEPARTAMENTO REGIONAL DO INSTITUTO PROPONENTE, E R$_____ DE CONTRAPARTIDA DE OUTROS PARCEIROS.

A PRIMEIRA INSTITUIÇÃO PARCEIRA DESTA PROPOSTA:
APORTARÁ R$_____ DE RECURSOS DE CONTRAPARTIDA, SENDO R$_____ DE CONTRAPARTIDA FINANCEIRA E R$_____ DE CONTRAPARTIDA ECONÔMICA.

A SEGUNDA INSTITUIÇÃO PARCEIRA DESTA PROPOSTA (SE HOUVER):
APORTARÁ R$_____ DE RECURSOS DE CONTRAPARTIDA, SENDO R$_____ DE CONTRAPARTIDA FINANCEIRA E R$_____ DE CONTRAPARTIDA ECONÔMICA.

A TERCEIRA INSTITUIÇÃO PARCEIRA DESTA PROPOSTA (SE HOUVER):
APORTARÁ R$_____ DE RECURSOS DE CONTRAPARTIDA, SENDO R$_____ DE CONTRAPARTIDA FINANCEIRA E R$_____ DE CONTRAPARTIDA ECONÔMICA.

Estamos cientes das **regras de participação da Chamada Internacional Armazenamento de Energia CTG Brasil - SENAI e li o regramento** disponível no site senaipr.org.br/chamadaCTGbrasil .

Cidade, data da assinatura

_____
Nome do representante do Instituto Senai de Inovação Proponente

_____
Nome do representante de Outros Parceiros (se houver)
Cargo

_____
Nome do representante de Outros Parceiros (se houver)
Cargo

_____
Nome do representante de Outros Parceiros (se houver)
Cargo

ANNEX 2 - LETTER OF INTENT INDUSTRIAL MISSION (ENGLISH)

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 3 – WORK PLAN (PORTUGUESE)

1 DADOS CADASTRAIS DO PROPONENTE

1.1 Empresa Proponente					
Razão Social:					
CNPJ					
Endereço:					
Bairro:					
Cidade:				UF:	
CEP:		Telefone:	( )	Email:	
Porte	( ) Micro ( ) Pequena ( ) Média ( ) Grande ( ) Startup				
1.2 Dados do Dirigente da Empresa					
Nome:					
Cargo:			CPF:		
RG:			Órgão Expedidor:		
Email:			Telefone:	( )	
1.3 Coordenador					
Nome:					
Cargo:			Cargo:		
RG:			RG:		
Email:			Email:		
1.4 Histórico da Empresa:					
1.5 Histórico de P&D:					
1.6 Infraestrutura Disponível para Apoiar o Desenvolvimento do Projeto:					

2 DADOS DO ISI EXECUTOR

2.1 Dados da Unidade			
Departamento Regional			
Razão Social			
CNPJ		Telefone:	( )
2.2 Dados do Diretor			
Nome:			

Cargo:		CPF:	
RG:		Órgão Expedidor:	
Email:		Telefone:	( )
2.3 Dados do Pesquisador Líder			
Nome:			
Cargo:		CPF:	
RG:		Órgão Expedidor:	
Email:		Telefone:	( )

3 DADOS DO PROJETO

3.1 Descrição do Projeto

3.1.1 Título do Projeto

3.1.2 Descrição da Solução Voltada aos Desafios Propostos na Missão

Apresente qual(is) solução(ões) o seu projeto propõe para atender aos desafios propostos nesta Missão.

3.1.3 Descrição da Tecnologia a ser Desenvolvida

Descrever a tecnologia a ser desenvolvida, indicando o status atual de desenvolvimento, o desafio tecnológico a ser superado e o status futuro esperado, pós conclusão do Projeto proposto, indicando, de forma objetiva, quais as barreiras tecnológicas que impedem que o status futuro ainda não esteja disponível.

3.1.4 Descrição da Originalidade da Solução

Originalidade é a qualidade do que é diferente ou novo. No contexto desta Chamada, é original o projeto inovador e/ou que apresenta contribuições ao estado da arte da ciência e tecnologia[4]. Para ser original, um projeto deve resultar na criação e/ou no aprimoramento de equipamentos, processos, metodologias e técnicas.

[4] *A contribuição ao estado da arte está relacionada à produção de novos conhecimentos e aos avanços propostos e/ou alcançados em termos científicos e/ou tecnológicos*

3.1.5 Descrição da Aplicabilidade da Solução

Aplicabilidade é a característica do que se consegue aplicar, empregar, colocar em prática, ocasionar um efeito. A aplicabilidade avalia o potencial de aplicação do produto ou técnica desenvolvida, fundamentada na abrangência[5] e nos testes de funcionalidade[6], tendo como referência a fase da cadeia da inovação da pesquisa e possíveis restrições de utilização.

3.1.6 Descrição da Relevância da Solução

A relevância pondera a importância dos resultados do projeto. Para efeitos de analise desta chamada, serão consideradas as contribuições e impactos do projeto em termos econômicos[7], tecnológicos[8], científicos e socioambientais[9], incluindo todos os seus resultados.

3.1.7 Descrição dos Investimentos Realizados

Indicar, de maneira objetiva, quais os principais investimentos a serem realizados, destacando a importância de cada um, ressaltando a razoabilidade[10] de sua execução

3.2 Resultados Esperados da Solução/Projeto Proposto

3.3 Desdobramentos/Próximos Passos após a Conclusão do Projeto Proposto

3.4 Capital Humano

Descrição do Capital Humano envolvido na proposta (pessoas, experiência profissional e acadêmica, entre outras informações relevantes)

[5] *Abrangência representa a extensão do campo de ação em que o produto ou técnica é aplicável, em termos de setor econômico, segmento ou classe de consumo, número de consumidores ou potenciais usuários*

[6] *Os testes de funcionalidade são comprovações com método científico da eficácia do produto ou técnica e identificação de possíveis restrições, realizados em laboratório, campo, simulação computacional ou outros ambientes de ensaio equivalentes.*

[7] *Contribuições e impactos econômicos dizem respeito a ganhos com redução de custos, aumento da eficiência, melhoria da qualidade, oferta de novos serviços.*

[8] *Contribuições e impactos tecnológicos e científicos dizem respeito à melhoria de infraestrutura laboratorial, obtenção de propriedade intelectual e industrial, transferência de conhecimento e capacitação técnica para aplicação do produto ou técnica desenvolvida.*

[9] *Contribuições e impactos socioambientais dizem respeito aos benefícios e/ou prejuízos ao meio ambiente e à sociedade, por meio do controle dos impactos negativos e aumento dos impactos positivos*

[10] *A Razoabilidade dos custos avalia a pertinência dos gastos incorridos na execução do projeto e a viabilidade econômica dos investimentos realizados, considerando a fase na cadeia de inovação e a natureza dos resultados obtidos ou esperados*

3.5 Contribuições do Projeto para a CTG Brasil
Descrição de como este projeto é disruptivo e pode gerar valor, novos modelos de negócios e oportunidades para a CTG Brasil

3.6 Cronograma Físico			
Item	Etapas e Atividades	Início (Mês/Ano)	Fim (Mês/Ano)
[1]	Etapa 01 -		
[1. 1]			
[1. 2]			
[1. 3]			
[2]	Etapa 02 -		
[2. 1]			
[2. 2]			
[2. 3]			
[3]	Etapa 03 -		
[3. 1]			
[3. 2]			
[3. 3]			
[n]	Etapa n -		
[n. 1]			
[n. 2]			
[n. 3]			

3.7 Plano de Aplicação

Ord	Elemento de Despesa	Descrição Sintética do Item	Unidade	Qtd	Valor Unitário	Valor Total
(Exemplo)	*Mat. Consumo (Nacional)*	*Elemento filtrante para equipamento XYZ, ref. 5834*	*Pç*	*10*	*553,00*	*5. 530,00*
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
(. . . .)						
n.						
TOTAL GERAL						

Elementos de Despesa Disponíveis:

DESPESAS CORRENTES		DESPESAS DE CAPITAL
1. Pessoal e Encargos Sociais	6. Mat. Consumo (Desp. Acess. Import.)	1. Equip. Mat. Perm. (Desp. Acess. Import.)
2. Diárias	7. Serviços de Terceiros (PF)	2. Passagens e Despesas com Locomoção
3. Passagens e Despesas com Locomoção	8. Serviços de Terceiros (PJ)	3. Serviços de Terceiros (PF)
4. Mat. Consumo (Nacional)	9. Outras Despesas Correntes	4. Obras e Instalações
5. Mat. Consumo (Importado)		5. Outras Despesas de Capital

3.8 Quadro de Usos e Fontes

Grupos/Elementos de Despesas	Subvenção Econômica	Contrapartida da Empresa Proponente	Contrapartida ISI Executor	TOTAL
DESPESAS CORRENTES				
Pessoal e Encargos Sociais				
Diárias				
Passagens e Despesas com Locomoção				
Mat. Consumo (Nacional)				
Mat. Consumo (Importado)				
Mat. Consumo (Desp. Acess. Import.)				
Serviços de Terceiros (PF)				
Serviços de Terceiros (PJ)				
Outras Despesas Correntes				
DESPESAS DE CAPITAL				
Obras e Instalações				
Equip. Mat. Perm. (Nacional)				
Equip. Mat. Perm. (Importado)				
Equip. Mat. Perm. (Desp. Acess. Import.)				
Outras Despesas de Capital				
TOTAL GERAL				

3.9 Cronograma de Desembolso

Período	Subvenção Econômica	Contrapartida da Empresa Proponente	Contrapartida ISI Executor	Total
Ano 1				
Ano 2				
Ano 3				
Ano 4				
TOTAL				

3.10 Cronograma de Repasse

Parcela	Data (Mês/Ano)	Subvenção Econômica / Missão	Contrapartida da Empresa Proponente	Contrapartida ISI Executor	Total
Parcela 1					
Parcela 2					
Parcela 3					
(. . .)					
Parcela n					
TOTAL					

3.11 CRONOGRAMA DE PRESTAÇÃO DE CONTAS

Ano 1 (Mês/Ano)	Ano 2 (Mês/Ano)	Ano 3 (Mês/Ano)	Ano 4 (Mês/Ano)

ANNEX 4 - WORK PLAN (ENGLISH)

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 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:		**Telefone:**	( )
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

Present which solution(s) your project proposes to meet the challenges proposed in this Mission.

3.1.3 Description of the Technology to be Developed

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.

3.1.4 Solution Originality Description

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.

3.1.5 Solution Applicability Description

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.

3.1.6 Solution Relevance Description

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.

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.
SUMARY

Available Expenditure Elements:

CURRENT EXPENSES		DESPESAS DE CAPITAL
1. Personnel and Social Charges 2. Daily rates 3. Tickets and Travel Expenses 4. Consumption Material (National) 5. Consumable Material (Imported)	6. Consumable Material (Desp. Acess. Import) 7. Third-Party Services (PF) 8. Third-Party Services (PJ) 9. Other Current Expenses	1. Equip. Perm. mat. (Desp. Acess. Import.) 2. Tickets and Travel Expenses 3. Third-Party Services (PF) 4. Construction and Facilities 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 (Desp. Acess. 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	Counterpart of the Proponent Company	ISI Counterpart Executor	Total
Share 1					
Share 2					
Share 3					
(. . .)					
Share n					
TOTAL					

3.11 ACCOUNTABILITY SCHEDULE

Year 1 (Month/Year)	Year 2 (Month/Year)	Year 3 (Month/Year)	Year 4 (Month/Year)

ANNEX 5 – 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:

Motivation

Report unmet needs, problems, deficiencies, improvement points, challenges in which this project proposal intend to focus its efforts.

Originality

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.

Expected Benefits

Detail gains, cost reduction or efficiency increase, quality improvement or offer of new services.

Reduction of operational costs R$:

Increases reliability/availability

Increases security/safety

Increases revenue

Improves models for resource prediction

Others

Technical leader statement

Relevance to CTG Brasil

Post-Project ***For CTG BR***

Risks and Mitigation Approaches

Describe the risk factors that could compromise the execution or implementation of the proposed project.

Technical

Present the intrinsic risks of the technique, risks associated with its execution and how the research team plans to circumvent these problems.

Schedule

present the risks associated with the development time, completion of phases, delivery and validation of products, purchase.

Investments

Describe the risk factors regarding the requested investment. For exemple: changes in previous budget due to exchange rate

Technical leader ***For CTG BR***

Objective

In light of the "Motivation", explain the main objective of this project and which partial objectives must be met to achieve it.

Stakeholders

External

Other companies, institutions, economy sectors and etc.

Internal

CTG Br internal areas

Applicability

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.

Electric power sector

Other sectors and countries

New technological routes

Functionality Test

Product

List and detail the products types that will be delivered at the end of the project.

Timeline

Present a timeline with the project stages and which TRL it starts and finish.

Financial

Total

How much this project will cost?

Financial return

Present at least one of the following indicators Economic Viability Study (EVS): Payback Time, Internal Rate of Return (IRR) or Net Present Value (NPV).

Post-Project Resources

After project conclusion, there will be necessary any maintenance costs?

Prior-art

List examples of researches identified in the prior art analysis that have correlation with the activities and study proposes for this project.

Team

Technical Capability

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.

Qualification

Present a plan for personnel development. Include the name and institution, research area.
1. *Post-Doctorate;*
2. *PhD;*
3. *Master's degree;*
4. *Specializations.*

Training and courses are also considered.

CTG Brasil Involvement

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).

Technical-Scientific Production

Academic Productions

Present a plan containing:
1. *Papers that may be written and in which journals they could be submitted;*
2. *Scientific congresses and events;*
3. *Books or book chapter;*

Awards

Are there any national or international awards for which the project can be submitted?

Intelectual Property

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?

Technological Transfer

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.

International Cooperation

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.

Financial

Cost Reasonability

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.

Financing

Besides P&D ANEEL, there will be another type of financing? EMBRAPII, BNDES, FINEP for exemple.
There will be investment from other institutions?

Socio-Environmental Relevance

Social Impacts

Environmental Impacts

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).