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**THIS PRESENTATION COVERS THE FOLLOWING SUBJECTS:**

1. WHAT INITIATIVES IS THE MCTI SUPPORTING IN TERMS OF CLEAN ENERGY?
2. EXAMPLES OF INTERNATIONAL COLLABORATION

# 1. WHAT INITIATIVES IS THE MCTI SUPPORTING IN TERMS OF CLEAN ENERGY?

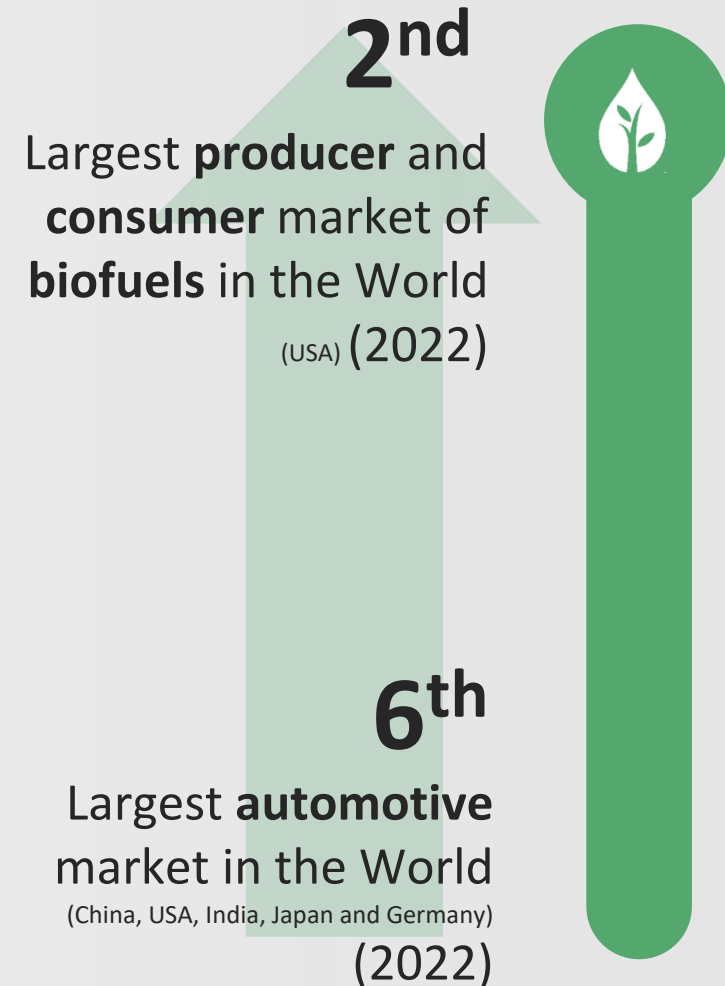
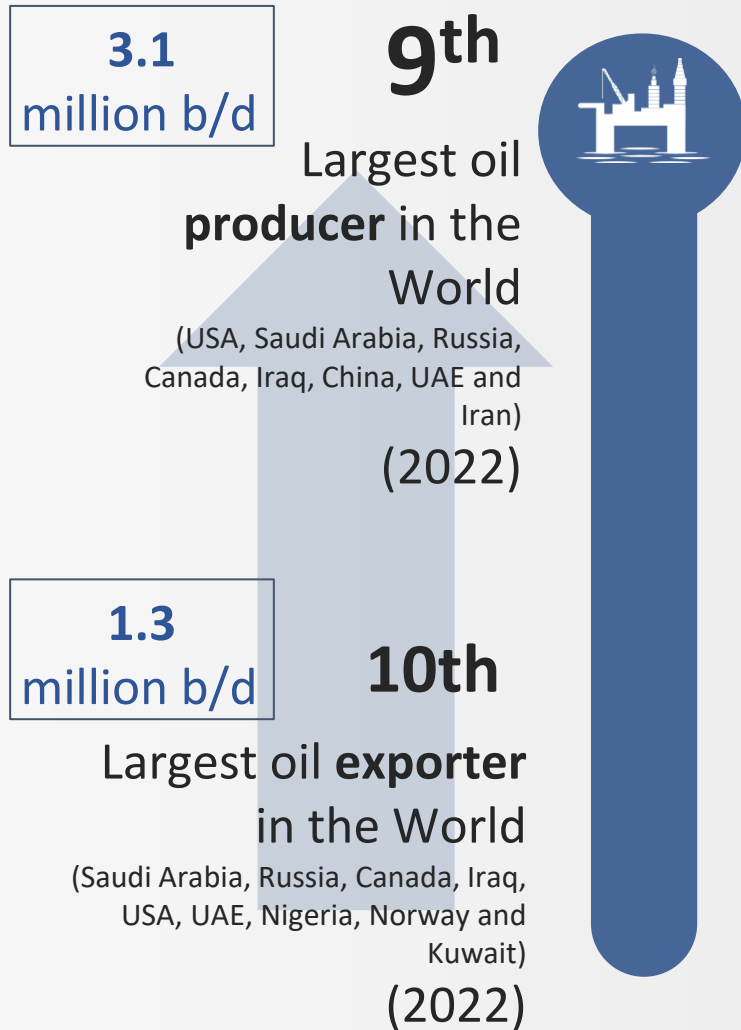
# OUR COMMITMENT

“Our investment program will have six axis: transport, social infrastructure, digital inclusion and connectivity, urban infrastructure, water for all and **energy transition**”

*President Lula, april 2023*



# RELEVANT POSITION IN THE WORLD



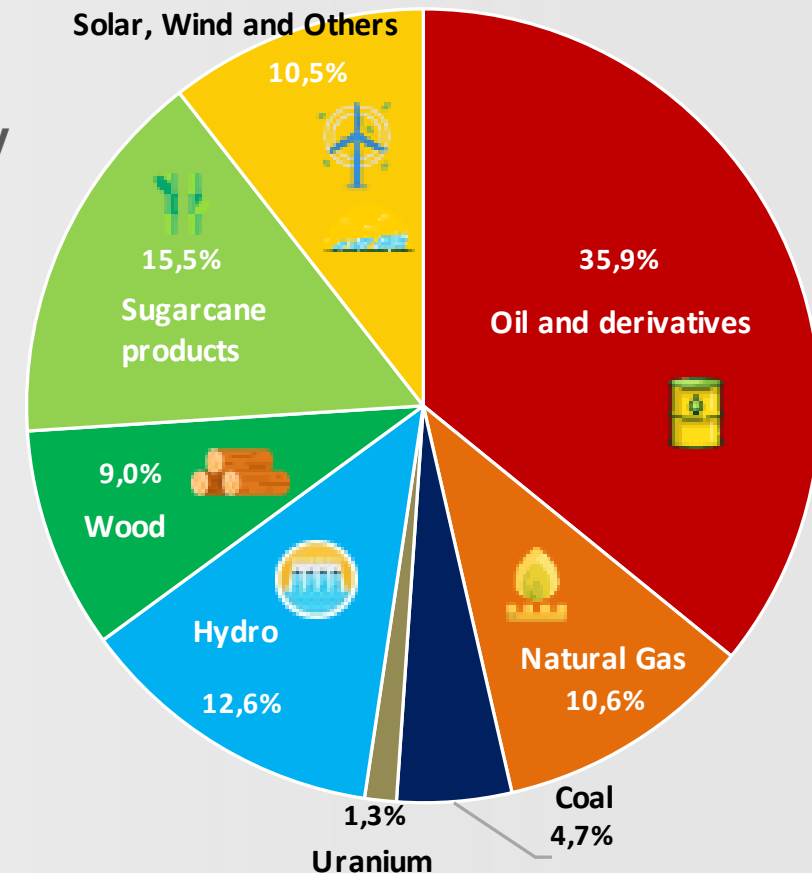
# The opportunity

## Brasil has...

- One of the **cleanest energy profiles** among major economies
- **Huge potential for clean and renewable energy**
- **Sustainable bioenergy** production
- **O&G** industry with **dynamism** and **investment capacity**
- **Technology and innovation capacities** in energy sector
- **Relevant domestic market**

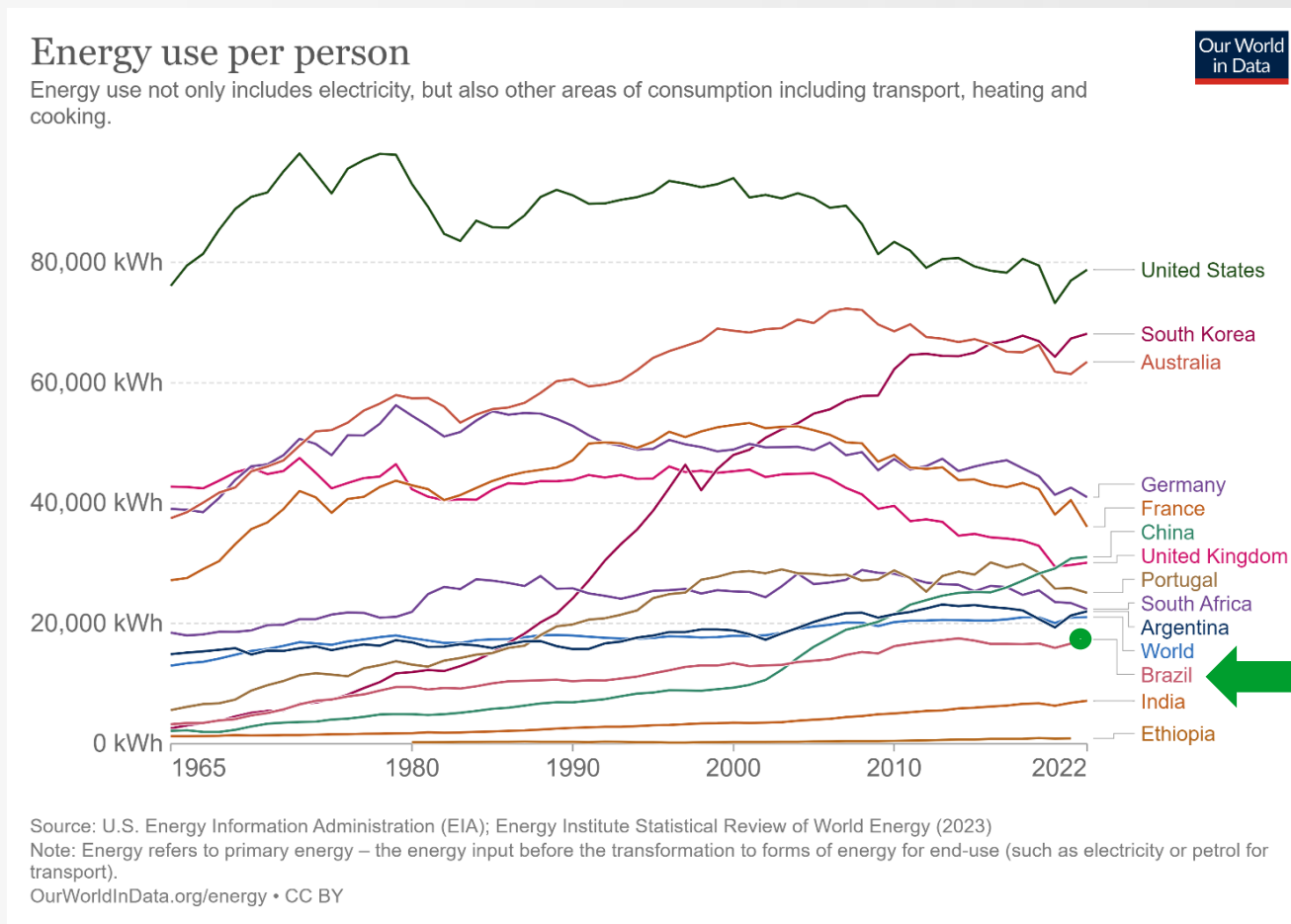
## Brazilian Energy Matrix 2022

Source: BEN 2023.

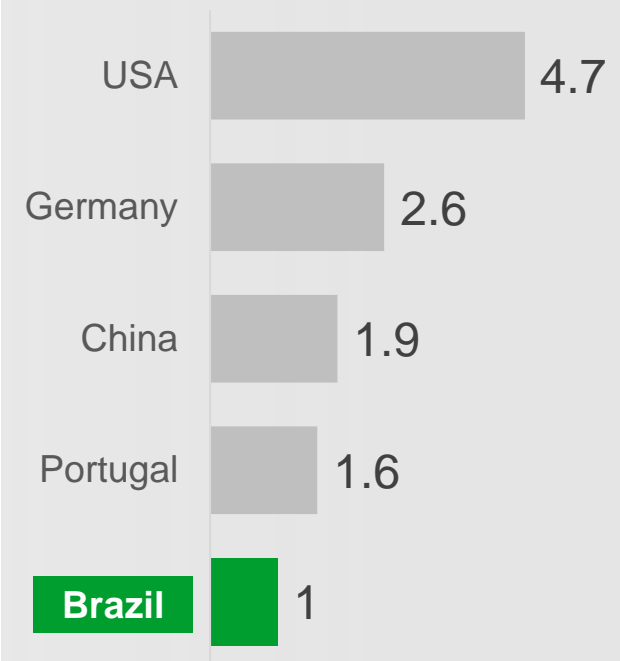


# Energy consumption

## per person in Brazil is expected...



### Comparative energy consumption per inhabitant:



# CLIMATE CHANGE AND COMMITMENTS



- Brazil intends to reduce greenhouse gas emissions by 50% below 2005 levels in 2030;
- Brazil intends to become carbon neutral in 2050.





# GOVERNMENT ALIGNMENT

MINISTÉRIO DA  
CIÊNCIA, TECNOLOGIA  
E INOVAÇÃO



# NEW GROWTH ACCELERATION PROGRAM

MINISTÉRIO DA  
CIÊNCIA, TECNOLOGIA  
E INOVAÇÃO



## Improvement of the regulatory environment & of environmental licensing:

- ▶ **Regulatory frameworks** (transport, energy, natural gas, mining, mobility)
- ▶ **Regulatory agency efficiency**

## Incentives to ecological transition:

- ▶ **Low carbon fuels**
- ▶ **Decarbonization incentives**

## Expansion of Credit & Economic Incentives:

- ▶ **Expansion of long-term financing**
- ▶ **Credit cost reduction**
- ▶ **New credit instruments** for structuring projects

## Improvement of Concession Mechanisms and PPPs:

- ▶ **Guarantee system**
- ▶ **Support to the structuring of projects** in states & municipalities

## Planning, Management & Public Procurement:

- ▶ **Public procurement** and national content for neo-industrialization
- ▶ **Improvement of country's transfer instrument**



# NEW GROWTH ACCELERATION PROGRAM



Energy  
Transition &  
Security



Low carbon  
fuels



Mineral  
Research



Energy  
Generation



Luz para  
Todos



Oil and  
Gas



Energy  
Transmission



Energy  
Efficiency

Investment

US\$ **110.9**  
billion

US\$ **92.3** billion  
**Energy Efficiency**  
2023-2026

US\$ **18.6**  
billion post-2026

NOVO **PAC**  
DEVELOPMENT AND SUSTAINABILITY

# NEW GROWTH ACCELERATION PROGRAM



**Efficient and  
Sustainable  
Transportation**



**Airports**



**Railways**



**Waterways**



**Ports**



**Highways**

NOVO **PAC**  
DEVELOPMENT AND SUSTAINABILITY

**Investment**

US\$ **71.7**  
**billion**

US\$ **45.4** billion  
2023-2026

US\$ **26.3** billion  
post-2026



## Main objective

Promote the expansion of the production and use of biofuels in Brazil's transportation matrix

## RenovaBio is the National Biofuels Policy, implemented through Law No. 13,576/2017

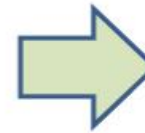
- One **CBIO** is equivalent to one ton of CO<sub>2</sub>eq avoided into the atmosphere;
- It is traded by the biofuel **producers** in the Brazilian stock exchange market (B3);
- Fuel **distributors** must buy CBio in order to comply their individual targets. Otherwise they are liable to penalties and sanctions.

### ANNUAL COMPULSORY TARGETS FOR REDUCING GREENHOUSE GAS EMISSIONS

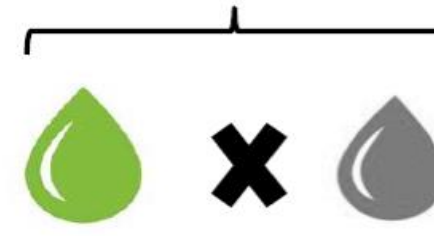
YEAR	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
<b>Goal</b> (Millions CBIOs)	35,98	42,35	50,81	58,91	66,49	72,93	79,29	85,51	90,67	95,67



- Model and Emission Factors based on Life Cycle Assessment
- Input of agricultural data and industry data



## ENERGY AND ENVIRONMENTAL EFFICIENCY RATING



RESULTS  
Emissions of biofuel  
from producer A

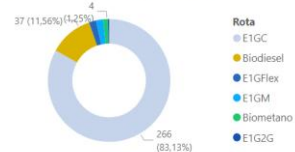
Fossil used as  
reference

*Each producer will be evaluated individually*

Processos Certificados por Biocombustível



Processos Certificados por Rota



% Usinas Certificadas em relação às Usinas Autorizadas  
**75,29%**

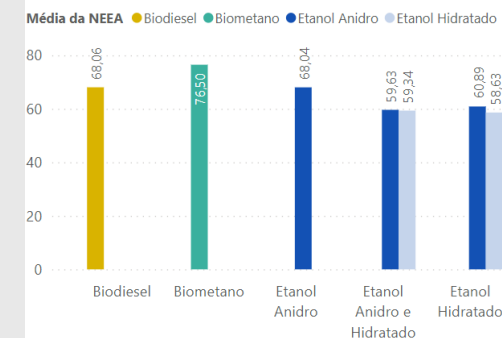
% Usinas em Processo de Certificação em relação às Usinas Autorizadas  
**78,12%**

Produtores de Biocombustíveis



**Usina Autorizada:** usina autorizada pela ANP a exercer a atividade de produção de biocombustível.  
**Usina Certificada:** usina autorizada pela ANP que tenha Certificado da Produção Eficiente de Biocombustíveis e esteja habilitada a solicitar a emissão de Crédito de Descarbonização.

Média da Nota Efic. Energética (gCO2Eq/MJ) por Biocombustível



# BIOFUELS SECTOR IN NUMBERS



## Ethanol

Authorized Unities

356

Authorized capacity

Hydrated – 132.000 m<sup>3</sup>/d  
Anhydrous – 244.000 m<sup>3</sup>/d

Production in 2022

Hydrated – 18.4 billion liters  
Anhydrous – 12.3 billion liters



## Biodiesel

Authorized Unities

59

Authorized capacity

33.000 m<sup>3</sup>/d

Production in 2022

6.27 billion liters



## Biomethane

Authorized Unities

5

Authorized capacity

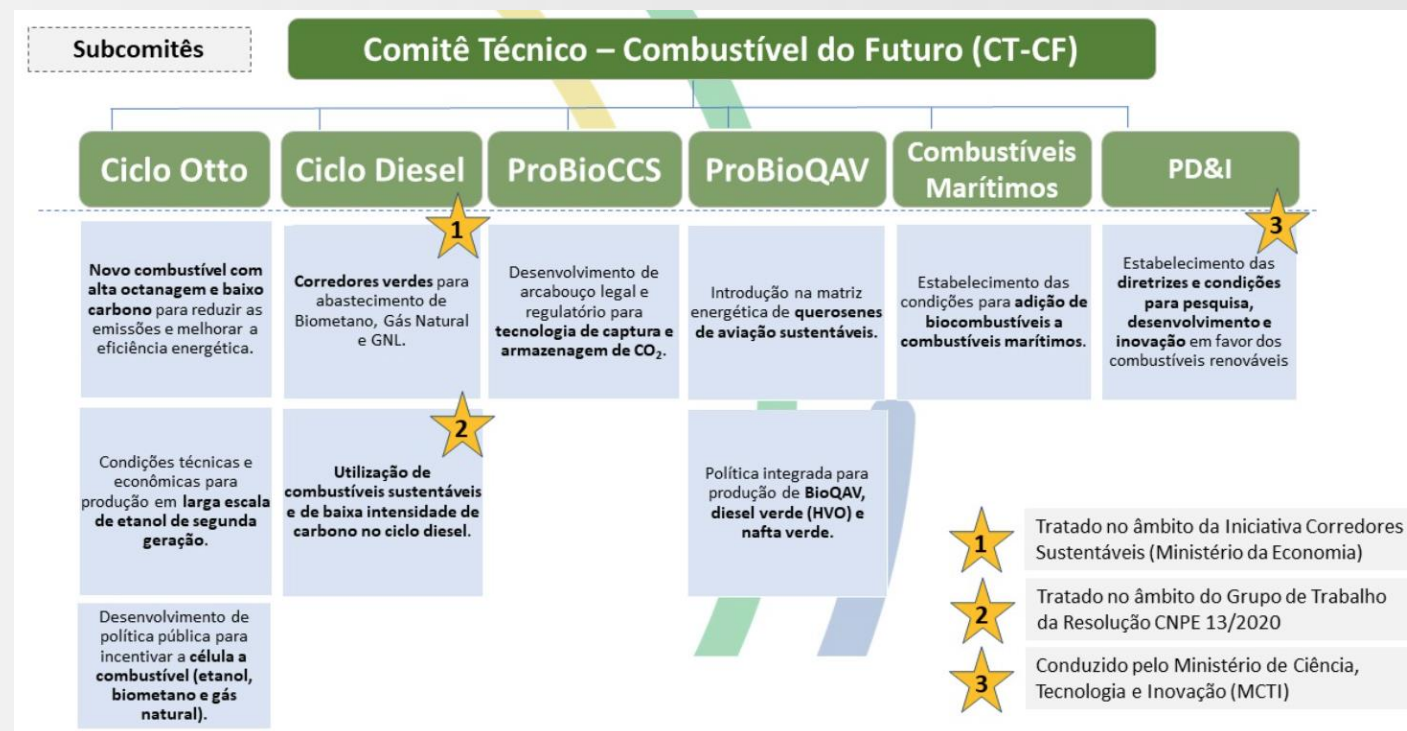
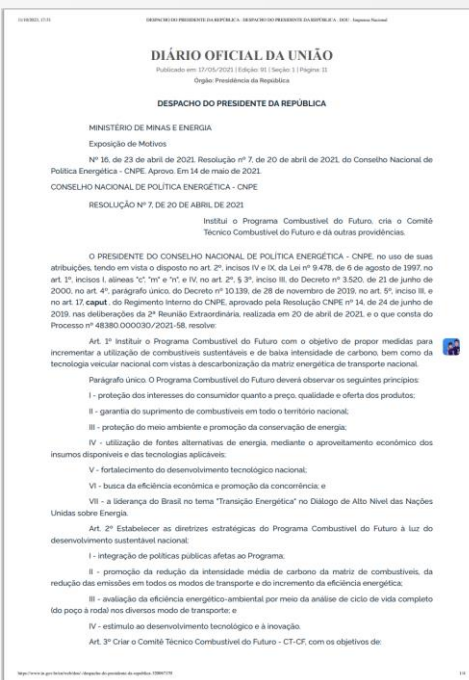
387.113 m<sup>3</sup>/d

Production in 2022

-

# FUEL OF THE FUTURE PROGRAM

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# FUEL OF THE FUTURE PROGRAM

MINISTÉRIO DA  
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E INOVAÇÃO



GROUP MEASURES TO KEEP INVESTMENTS IN AUTOMOTIVE SECTOR AND BIOENERGY FOR MOBILITY IN BRAZIL

INTEGRATE PUBLIC POLICIES ON MOBILITY

CREATE NATIONAL PROGRAMS FOR SAF AND GREEN DIESEL

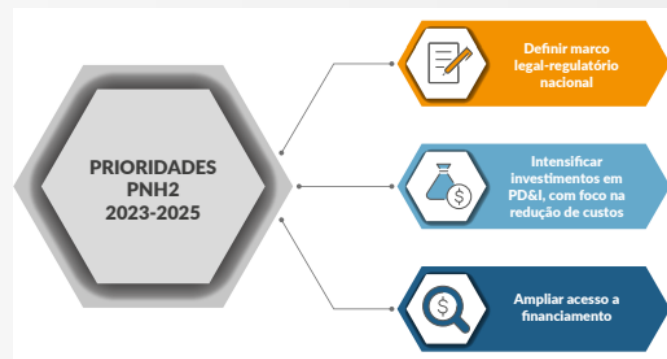
LEGAL FRAMEWORK FOR CARBON CAPTURE, UTILISATION AND STORAGE

RAISE THE PARTICIPATION OF ETANOL IN GASOLINE (E30)

# NATIONAL HYDROGEN PROGRAM – PNH2

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E INOVAÇÃO

GOVERNO FEDERAL  
**BRASIL**  
UNIÃO E RECONSTRUÇÃO



# GAS TO EMPLOY PROGRAM - GE



Goal 4: Integrate natural gas into the national energy transition strategy to contemplate synergies and investments that favor the development of low-carbon solutions, such as:

- Biogas/biomethane
- Hydrogen
- Industrial cogeneration
- CCUS



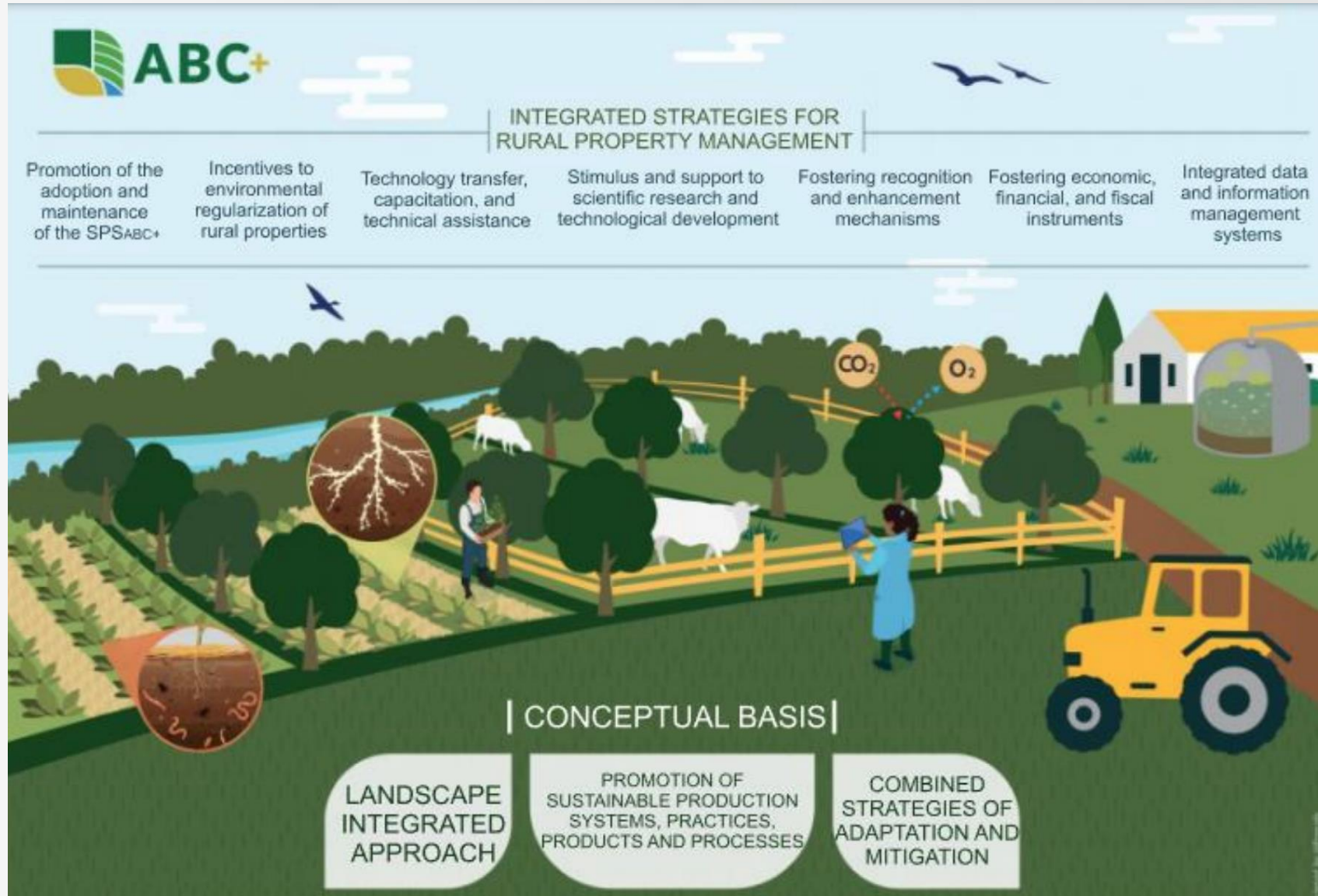
Demand

Role of Natural Gas in the Energy Transition

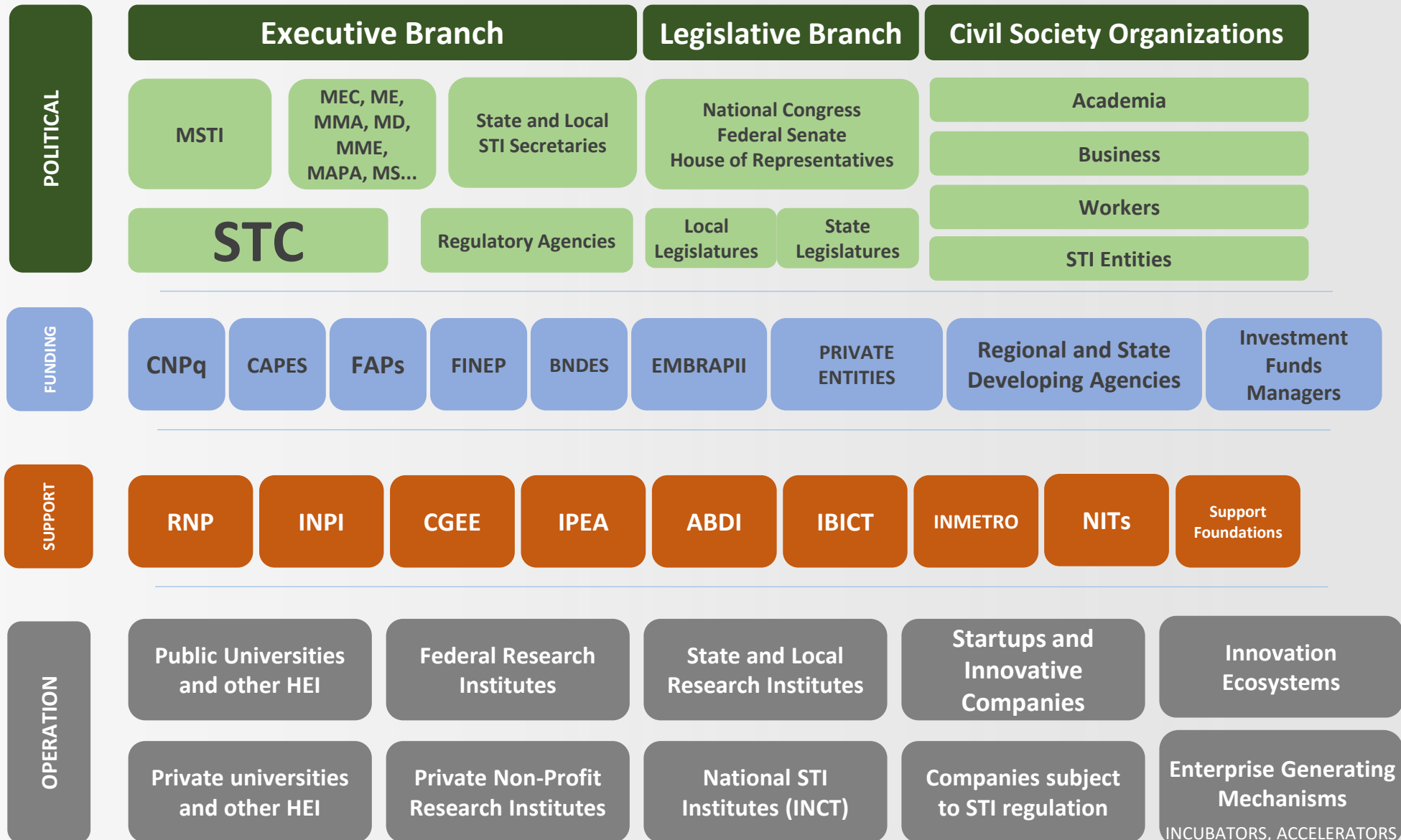
Goal

Identify strategies and mechanisms to align natural gas market development efforts and related investments with the energy transition

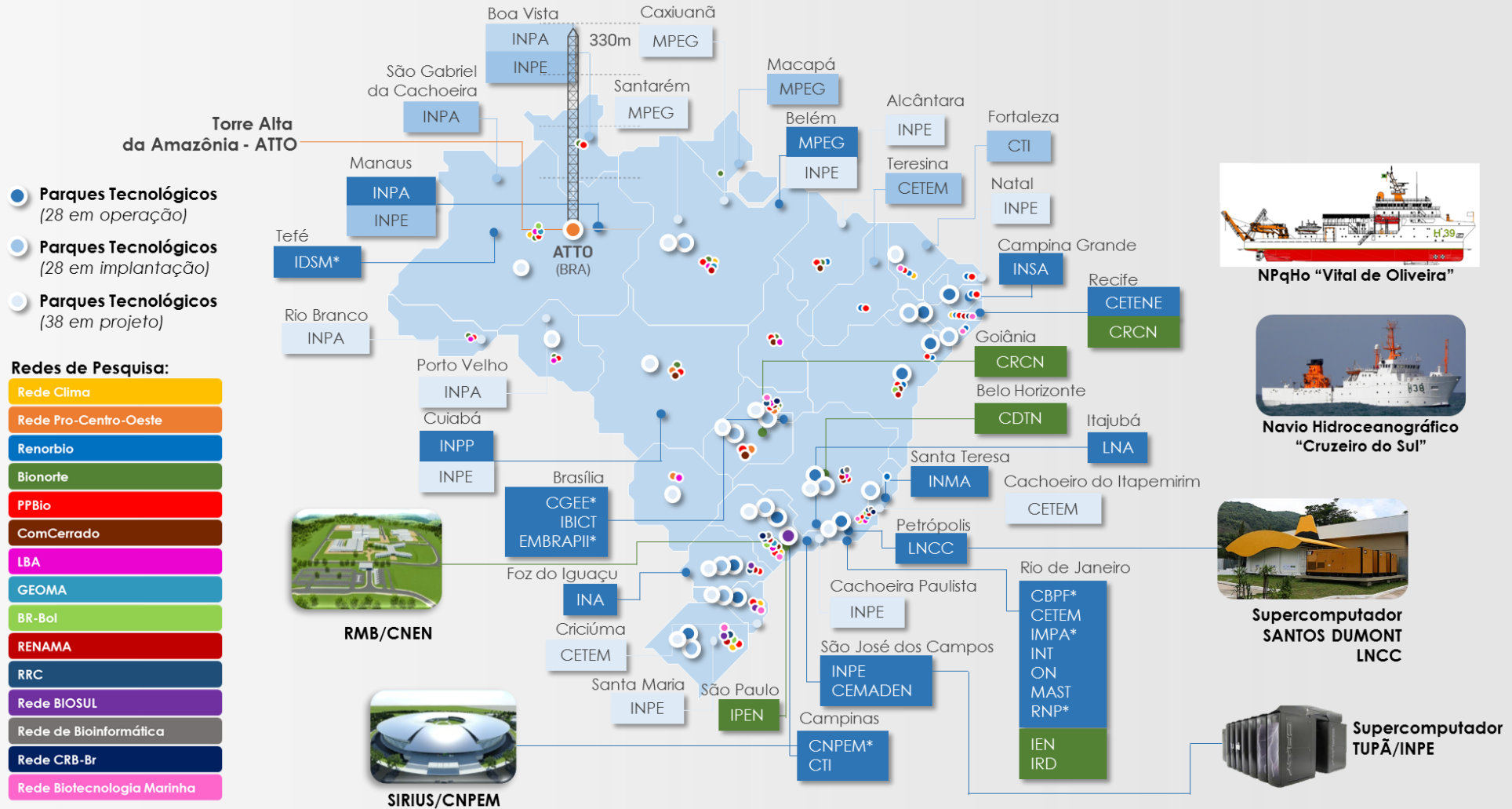
# LOW CARBON AGRICULTURAL PLAN



# ST&I STRUCTURE IN BRAZIL



# ST&I SYSTEM - NATIONAL PRESENCE



# ST&I POLICY CHALLENGES



**PLACING BRAZIL  
AMONG THE  
COUNTRIES WITH  
THE HIGHEST  
DEVELOPMENT IN  
ST&I**



**IMPROVE  
INSTITUTIONAL  
CONDITIONS FOR  
INCREASING  
PRODUCTIVITY OF  
INNOVATION**



**REDUCE REGIONAL  
DISPARITIES IN  
PRODUCTION AND  
ACCESS TO ST&I**

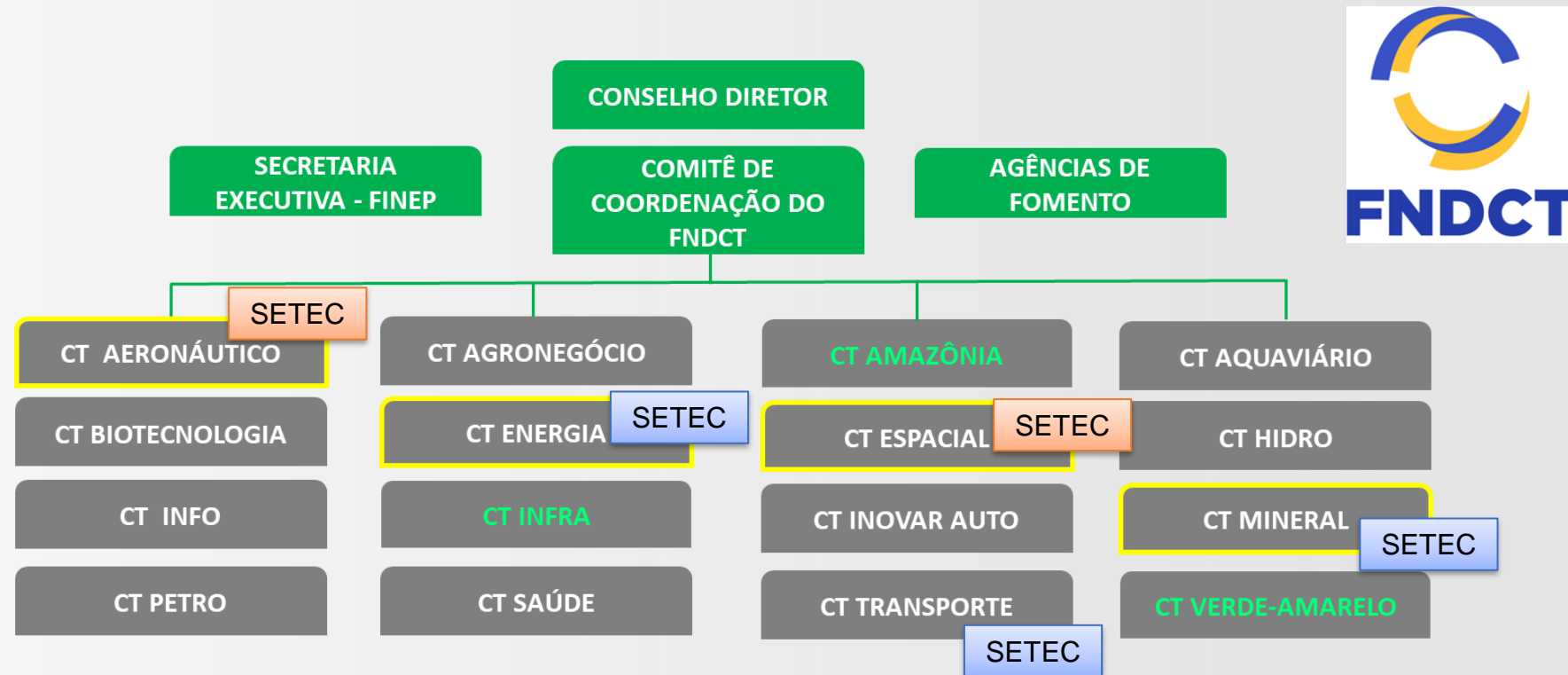


**STRENGTHENING  
THE BASIS FOR  
PROMOTING  
SUSTAINABLE  
DEVELOPMENT**



**DEVELOP  
INNOVATIVE  
SOLUTIONS FOR  
PRODUCTIVE AND  
SOCIAL INCLUSION**

# NATIONAL FUND FOR ST&I



The FNDCT offers financial resources to research institutions, universities and companies seeking to undertake research and technological development projects across a wide range of knowledge domains.



# PUBLIC CALLS LAUNCHED IN 2022

MINISTÉRIO DA  
CIÊNCIA, TECNOLOGIA  
E INOVAÇÃO



## MCTI-FINEP-FNDCT

(Renewable Energy, Biofuels, Oil and Gas, Transport)

### Public Selection

**MCTI/FINEP/FNDCT 2022 – Offshore  
Exploration and Production  
Technologies**

Non-refundable Resources

**Amount:** BRL 90 million

**Result:** 21 approved proposals

**Status:** merit analysis

### Public Selection

**MCTI/FINEP/FNDCT – Development of the  
Biogas Chain**

Non-refundable Resources

**Amount:** BRL 20 million

**Result:** 8 approved proposals

**Status:** under contract

### Public Selection

**MCTI/FINEP/FNDCT – Radical Innovation  
in the Electrical Sector**

Non-refundable Resources

- Continuous flow

**Amount :** BRL 55,5 million

**Result:** 7 submitted proposals

**Status:** merit analysis

# PUBLIC CALLS LAUNCHED IN 2022

## MCTI-FINEP-FNDCT

(Renewable Energy, Biofuels, Oil and Gas, Transport)



### Public Selection FNDCT/ Finep 2022 – Mining and Development Program

Non-refundable Resources

**Amount:** BRL 60 million

**Result:** 27 approved proposals

**Status:** under contract



### Public Selection FNDCT/ Finep 2022 – Fuel of the Future

Non-refundable Resources

**Amount:** BRL 50 million

**Result:** 7 approved proposals

**Status:** under contract



### Public Selection MCTI/FINEP/FNDCT/CT INFRA Energias Renováveis 2022 – Energy Efficiency

Non-refundable Resources

**Amount:** BRL 5 million

**Result:** 25 approved proposals

**Status:** under contract

# PUBLIC CALLS LAUNCHED IN 2022

MINISTÉRIO DA  
CIÊNCIA, TECNOLOGIA  
E INOVAÇÃO



## MCTI-CNPq-FNDCT

(Renewable Energy, Biofuels, Oil and Gas, Mineral Resources)

**CNPq/MCTI ABRE CHAMADA PARA APOIO A PROJETOS PARA CADEIAS PRODUTIVAS DE MINERAIS ESTRATÉGICOS**

Serão beneficiados projetos que visem contribuir significativamente para o desenvolvimento integral das cadeias produtivas dos minerais estratégicos, formar recursos humanos e capacitar infraestrutura laboratorial para o desenvolvimento de modelos de depósitos minerais estratégicos, laboratorial e piloto para caracterização tecnológica, processamento, produção e uso de minerais estratégicos em materiais avançados e produtos de alta tecnologia.

Recursos: R\$ 38 milhões  
Submissão até 14/09/2022

Acesse a chamada em:  
[http://memoria2.cnpq.br/web/guest/chamadas-publicas?p\\_p\\_id=resultadosportlet\\_WAR\\_resultadoscnpqportlet\\_INSTANCE\\_02aM&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=10849](http://memoria2.cnpq.br/web/guest/chamadas-publicas?p_p_id=resultadosportlet_WAR_resultadoscnpqportlet_INSTANCE_02aM&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=10849)

Chamada CNPq/CT-Mineral/CT-Energ N° 27/2022 - PD&I para o desenvolvimento integral das cadeias produtivas de Minerais Estratégicos

**CNPq** MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÕES

**Public Call MCTI/CNPQ –  
27/2022:**

“Strategic Mineral  
Production Chains”.

**Amount:** BRL 38 milion

**Result:** 54 approved  
proposals

**CNPq/MCTI ABRE CHAMADA PARA APOIO A PROJETOS NA ÁREA DE TRANSFORMAÇÃO MINERAL EM MICRO, PEQUENA E MÉDIA ESCALA**

Serão beneficiados projetos de pesquisa na área mineral, através da inserção e a transferência de tecnologias em micro, pequenas e médias empresas, cooperativas, sindicatos e associações de mineração e transformação mineral organizadas em Arranjos Produtivos Locais de Base Mineral (APL) com prioridades para os seguintes segmentos: agregados minerais para a construção civil; agrominerais; água mineral; calcário, cal e cimento; cerâmica de revestimento; cerâmica vermelha; gemas, joias, metais preciosos e afins; gesso; rochas e minerais em pegmatitos; rochas ornamentais; e sal marinho.

Recursos: R\$ 8,52 milhões  
Submissão até 13/09/2022

Acesse a chamada em:  
[http://memoria2.cnpq.br/web/guest/chamadas-publicas?p\\_p\\_id=resultadosportlet\\_WAR\\_resultadoscnpqportlet\\_INSTANCE\\_02aM&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=11085](http://memoria2.cnpq.br/web/guest/chamadas-publicas?p_p_id=resultadosportlet_WAR_resultadoscnpqportlet_INSTANCE_02aM&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=11085)

Chamada CNPq/CT-Mineral N° 28/2022 - PD&I, Gerência Executiva Tecnológica, Infraestrutura Laboratorial, Capacitação e Formação de PDI para Mineração e Transformação Mineral em Micro, Pequena e Média Escala

**CNPq** MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÕES

**Public Call MCTI/CNPQ –  
28/2022:**

“Mining and Mineral  
Transformation in MSME”.

**Amount:** BRL 8,52 milion

**Result:** 14 approved  
proposals

**CNPq/MCTI ABRE CHAMADA PARA APOIO À CADEIA PRODUTIVA DO NIÓBIO**

Serão beneficiados projetos de PD&I na cadeia produtiva de nióbio, estimulando a cooperação entre empresas e ICTs e visando a agregar valor, adensar o conhecimento e promover a sustentabilidade e competitividade dessa cadeia no Brasil, nas seguintes linhas de pesquisa:

- Mapeamento, prospecção e exploração;
- Diversificação dos usos e aplicações de óxidos de nióbio;
- Diversificação dos usos e aplicações das ligas de Fe-Nb;
- Diversificação dos usos e aplicações em ligas especiais de nióbio, exceto as anteriores, em materiais de alto desempenho;
- Diversificação dos usos e aplicações em ligas especiais de nióbio metálico;
- Projetos de PD&I para novos materiais baseados em nióbio.

Recursos: R\$ 20 milhões  
Submissão até 19/09/2022

Acesse a chamada em:  
[http://memoria2.cnpq.br/web/guest/chamadas-publicas?p\\_p\\_id=resultadosportlet\\_WAR\\_resultadoscnpqportlet\\_INSTANCE\\_02aM&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=10926](http://memoria2.cnpq.br/web/guest/chamadas-publicas?p_p_id=resultadosportlet_WAR_resultadoscnpqportlet_INSTANCE_02aM&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=10926)

Chamada CNPq/MCTI/FNDCT N° 23/2022 – InovaNióbio

**CNPq** MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÕES

**Public Call MCTI/CNPQ –  
23/2022:**

“Support for the Niobium  
Production Chain”.

**Amount:** BRL 20 milion

**Result:** 21 approved  
proposals

# PUBLIC CALLS LAUNCHED IN 2022

MINISTÉRIO DA  
CIÊNCIA, TECNOLOGIA  
E INOVAÇÃO



## MCTI-CNPq-FNDCT

(Renewable Energy, Biofuels, Oil and Gas, Transport, Mineral Resources)

**CNPq/MCTI ABRE CHAMADA PARA APOIO A PESQUISAS NO SETOR DE TRANSPORTE AQUAVIÁRIO E CONSTRUÇÃO NAVAL**

Serão beneficiados projetos de pesquisa em Ciência, Tecnologia e Inovação (CT&I) na área de Transporte Aquaviário e Construção Naval, nas linhas de pesquisa:

- a) Construção, montagem e logística em atividades offshore;
- b) Tecnologias de Informação e Comunicação (TIC) para as Atividades Aquaviárias;
- c) Veículos de superfície ou submersíveis, autônomos ou operados remotamente, para atividades offshore;
- d) Digitalização da navegação e e-navigation;
- e) Segurança da navegação e do transporte aquaviário na região amazônica; e
- f) Prevenção do escarpelamento no transporte aquaviário na Amazônia.

Recursos: R\$ 23,17 milhões  
Submissão até 31/08/2022

Acesse a chamada em:  
[http://memoria2.cnpq.br/web/guest/chamadas-publicas?p\\_p\\_id=resultadosportlet\\_WAR\\_resultadoscnpqportlet\\_INSTANCE\\_02aM6&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=10918](http://memoria2.cnpq.br/web/guest/chamadas-publicas?p_p_id=resultadosportlet_WAR_resultadoscnpqportlet_INSTANCE_02aM6&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=10918)

Chamada CNPq/MCTI-FNDCT Nº 14/2022 - Desenvolvimento de CT&I para os Setores de Transporte Aquaviário e Construção Naval

18:07

### Public Call MCTI/CNPQ – 14/2022:

“Waterway Transport and Shipbuilding Sector”.

**Amount:** BRL 22,17 milion

**Result:** 20 approved proposals

**CNPq/MCTI ABRE CHAMADA PARA APOIO A APLICAÇÕES DE PD&I EM EXPLORAÇÃO DE RECURSOS MINERAIS E DE PETRÓLEO GÁS NATURAL**

Serão beneficiados projetos de pesquisa em Ciência, Tecnologia e Inovação (CT&I) na área de Aplicações de PD&I em prospecção e exploração de recursos minerais e de petróleo & gás natural.

Recursos: R\$ 10 milhões  
Submissão até 02/09/2022

Acesse a chamada em:  
[http://memoria2.cnpq.br/web/guest/chamadas-publicas?p\\_p\\_id=resultadosportlet\\_WAR\\_resultadoscnpqportlet\\_INSTANCE\\_02aM6&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=10897](http://memoria2.cnpq.br/web/guest/chamadas-publicas?p_p_id=resultadosportlet_WAR_resultadoscnpqportlet_INSTANCE_02aM6&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=10897)

Chamada CT-PETRO Nº 16/2022 - Aplicações de PD&I em Prospecção e Exploração de Recursos Minerais e de Petróleo Gás Natural

18:07

### Public Call MCTI/CNPQ – 16/2022:

“Exploration of Mineral and Oil and Natural Gas Resources”.

**Amount:** BRL 10 milion

**Result:** 13 approved proposals

**CNPq/MCTI ABRE CHAMADA PARA APOIO A PESQUISAS NO SETOR DE TRANSPORTE**

Serão beneficiados projetos de pesquisa em Ciência, Tecnologia e Inovação (CT&I) na área de Transporte, nas linhas de pesquisa:

- a) Inovações no transporte;
- b) Transporte inteligente no contexto brasileiro;
- c) Inovações em tecnologias de infraestrutura e superestrutura rodoviária e ferroviária;
- d) Pesquisa, Desenvolvimento e Inovação com foco no planejamento intermodalidade e regulação.

Recursos: R\$ 16,1 milhões  
Submissão até 31/08/2022

Acesse a chamada em:  
[http://memoria2.cnpq.br/web/guest/chamadas-publicas?p\\_p\\_id=resultadosportlet\\_WAR\\_resultadoscnpqportlet\\_INSTANCE\\_02aM6&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=10914](http://memoria2.cnpq.br/web/guest/chamadas-publicas?p_p_id=resultadosportlet_WAR_resultadoscnpqportlet_INSTANCE_02aM6&filtro=abertas&etalha=chamadaDivulgada&idDivulgacao=10914)

Chamada CNPq/MCTI-FNDCT Nº 15/2022 - Desenvolvimento de CT&I para o Setor de Transporte

18:07

### Public Call MCTI/CNPQ – 15/2022:

“Support for Research in the Transport Sector”.

**Amount:** BRL 16,1 milion

**Result:** 36 approved proposals



# SUPPORT SOURCES FOR ST&I



Prosperity Fund



## 2. EXAMPLES OF INTERNATIONAL COLLABORATION

# Nanotechnology, Advanced Materials, Photonics and Quantum Technologies



Materials Avançados e  
Nanotecnologia



Considering the potential to accelerate the country's technological development, MCTI has been stimulating, articulating and financing International Strategic Alliances for decades, specially on the field of Nanotechnology, Advanced Materials, Photonics and Quantum Technologies.

The main guidelines are:

- (i) HR Training;
- (ii) Increasing in the quality of National Science;
- (iii) Internationalization of our Science and Companies;
- (iv) Opening of new markets;
- (v) Searching for new business models;
- (vi) Searching for new sources of financing; and
- (vii) Dissemination of National Science.





- Memorandum of Understanding on Nanotechnology and Quantum Technologies;
- Public Call to Mobility of Researchers between Brazil and Portugal;
- Seminar and Workshops in Portugal (nov-23) and in Brazil (sept-24).



- 03 Memorandum of Understanding on Science, Technology and Innovation;
- Brazil-China Center for Research and Innovation in Nanotechnology (CBCIN).



- BRICS Working Group on Materials Science and Nanotechnology
- Photonics Working Group
- Virtual Institute of Photonics (BRICS VIP)



- Establishment of Brazil-Argentine Center for Nanotechnology (CBAN);
- Brazil-Argentine Public Call to support Projects on Nanotechnology .



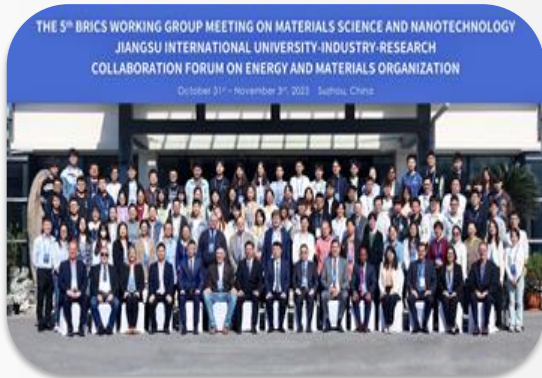
- Brazilian Participation on the NANOREG Program (common European approach to the regulatory testing of nanomaterials);
- NanoDialogues and Roadmap of actions related to nanotechnology regulation in Brazil.



- Memorandum of Understanding on Science, Technology and Innovation;
- Seminar and Workshops in UK (Oct-22), in Brazil (Nov-24) and in UK (Apr-24).

## Last Technical Missions

Sozhou, China



5th MEETING OF THE BRICS WORKING GROUP ON MATERIALS SCIENCE AND NANOTECHNOLOGY

Lisbon and Braga



TECHNICAL MISSION TO PORTUGAL AND LUSO-BRAZILIAN MEETING ON NANOSCIENCES AND NANOTECHNOLOGY

Shangai, China



1st BRAZIL-CHINA NANOTECHNOLOGY SEMINAR

London, Birmingham and Cambridge

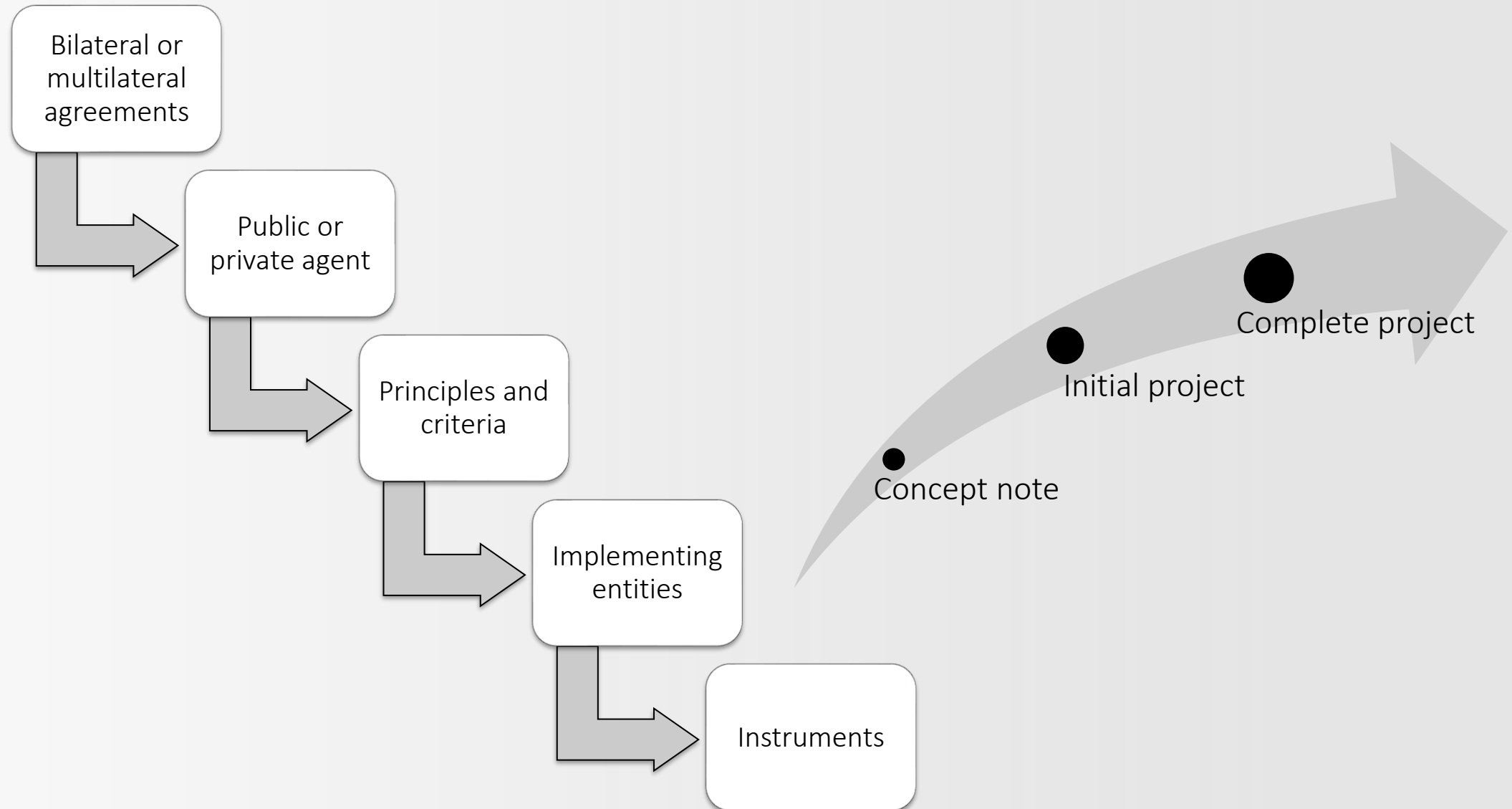


TECHNICAL MISSION TO THE UNITED KINGDOM "INNOVATION AND ENTREPRENEURSHIP IN ADVANCED MATERIALS"

### Next International Activities:

- (i) Technical Mission on Graphene Innovation (Singapore and Manchester – April, 2024);
- (ii) BRICS WG on Nanotech Meeting (Russia – August, 2024);
- (iii) Brazil China Seminar on Technological Development and Innovation (Shanghai - September, 2024); and
- (iv) Brazil Portugal and Brazil Russia Workshop on Quantum Technologies (Rio de Janeiro – September, 2024)

## Operationalization Macroflow of Resources - Climate Financing – International Funds



## GEF EDInova Project

Aims to mitigate greenhouse gas emissions from the building sector by enhancing policies and institutional frameworks, conducting demonstrations (pilots), implementing technologies, fostering innovations in the construction sector and financial system, and providing training and disseminating best practices.



- Requested Funding: USD 10 million
- Project Lead: MCTI
- Implementing Agency: UNEP (United Nations Environment Programme)
- Endorsement Letter from the Brazilian Government
- Scope: National
- Duration: 60 months

## PROQR - Climate-Impact-Free Alternative Fuels

Establish an international reference model for the decentralized production of synthetic aviation fuels.



Brazil and Germany in partnership for decarbonization

- Implemented by: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
- Budget: EUR 5.000.000 + unpredictable
- Duration: 2017 – 2023
- Partners: German Aerospace Center (DLR), National Agency of Petroleum Natural Gas and Biofuels (ANP)



## REGINA Project (Rare Earth Global Industry and New Applications)



UFSC, CETEM, CBMM, CDTN,  
USP, IPT, WEG, CODEMGE



IWKS, TUD, HZDR, TUC,  
RWTH/IME, THGA, Outotec,  
KME, GMB

### Brazilian Contribution:

- 2016 – 2022: through decentralization of budgetary credit to UFSC, CETEM, CDTN, UFCat (Total Value: R\$ 1.85 million)
- 2022 – FNDCT/CT Mineral/Finep Order - R&D for the competitive and sustainable development of processes and products in the rare earth production chain within the scope of international cooperation (Total Value: R\$ 5.0 million) – awaiting resource release.



## Brazil-Sweden Cooperation: Sustainable Mining Subgroup



Marisa Monte / Mineral  
Technology Center (CETEM)



Mikael Larsson / Swerim

Currently evaluating three project proposals submitted to the Vinnova-Embrapii Call under the Sustainable Mining Subgroup

- Expectation is to approve 10 proposals in the Call.



## Restoration of Areas Degraded by Coal Mining (1996 to 2003)



- Coal Mining; Demonstrative Projects in Areas Affected by Mining; Injection of Pulverized Coal into Combustion; Mitigation of the Impact of Coal Mining on Water Resources;
- Institutions: CETEM, ABCM, NRCAN/CANMET, Laval University

## Energy Transition and Environment



- Hydrogen, Lithium, and Electromobility;
- Recent, Initial Negotiations;
- Institutions: INT, CETEM, YTEC-CONICET

## Global Industry Standard on Tailings Management – GISTM.



- Interaction between the British Embassy and ANM through the "Dialogue Series on the new Global Standard for Waste Management in Brazil's Industry." Possibility of cooperation with this country;
- Tailings Dams, Circular Economy, Reuse of Waste;
- Institutions: National Mining Agency (ANM).

# Thank you!

**Osório Coelho**

Department of Programs and Innovation – DEPIN  
Deputy Secretary for Technological Development and Innovation – SETEC

**MINISTÉRIO DA  
CIÊNCIA, TECNOLOGIA  
E INOVAÇÃO**



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