

1. INTRODUCTION

The new Strategic Plan was conceived between August 2015 and December 2016 with the purpose of structuring the Centre's future aspirations, as well as its long-term goals in Research, Development and Innovation (RD&I), all of which should guide the Institution's actions over the next six years.

The Strategic Plan 2017-2022 is up to date and aligned with the policies and initiatives of the Ministry of Science, Technology, Innovation and Communication (MCTIC) and the Ministry of Mines and Energy (MME), as well as those of academy studies for scientific and technological development of the mineral sector, namely:

- Strategic Agenda of the Brazilian Presidency 2019-2022, Action 6 - Mining;
- ENCTI 2016-2022 (MCTIC, 2016);
- PNM-2030 (MME, 2011);
- Science, Technology and Innovation Action Plan for Strategic Minerals 2018-2022 (MCTIC, 2018);
- Strategic Guidelines for the Mineral Sector Fund CT Mineral (MCTIC, 2018);
- Valorization of Mineral Resources – Science Project for Brazil (Brazilian Academy of Sciences, 2018).

In addition, its construction was based on the Balanced Scorecard Methodology (BSC), in line with best practices of Strategic Management in Public Agencies.

1.1 Institutional mission

To develop innovative and sustainable technologies, and mobilize competences to overcome national challenges of the mineral sector.

1.2 Vision of future for 2022

To be the Centre of Excellence in Research, Development and Innovation (RD&I) in mineral technology, recognized by its strategic contribution to the Country.

1.3 Values and Principles

The values that guide CETEM's acting are:

- I. Scientific and Technological Excellence
- II. Knowledge Valorization
- III. Social Responsibility
- IV. Organizational Growth
- V. Ethics and Transparency

2. STRATEGIC PLANNING – SCIENTIFIC AND TECHNOLOGICAL AREAS

2.1 Structuring Axes (Fundamental Pillars / Strategic Themes)

CETEM is the only public research institution in Brazil that focuses on mineral technologies, therefore, it is also an inducing agent to the technological development of the mineral and metallurgical national sector and, indirectly, to the life quality of the Brazilian population.

In this context, the Centre intends to adopt a Technological Governance Model, consolidated in the Scientific and Technological Plan (PC&T), which purpose is to organize the Institution's actions related to RD&I, in order to successfully accomplish its Strategic Programs. The PC&T is annually reviewed and periodically monitored by the Technical Scientific Council (CTC) and the Internal Collegiates DIREX and DIRETEC, so that both resource distribution and priority projects are executed efficiently. These projects are distributed among three Strategic Programs, as follows:

- ✓ **Water and Energy, Waste and Sustainability,**
- ✓ **Strategic Minerals,**
- ✓ **Dimension Stone.**

In addition, two new Departments are to be created: the Department of Programs, Projects and Innovation (COPPI), which purpose is to lead the Strategic Programs, technically aligning the projects with the projected results, and the Department of Technical Competences (COCPT), which, in turn, aims to ensure the necessary infrastructure and competences for executing the strategic projects.

2.2 Strategic Programs, Subprograms and Projects

Therefore, CETEM identifies three strategic challenges in its Strategic Plan, and organizes its structuring projects portfolio to meet four project categories:

- I. Strategic programs formulated to overcome the national

challenges for the mineral sector.

- II. Projects for technology transfer that aim to solve real technical problems from the industry.
- III. Exploratory projects to deepen knowledge in topics with strategic potential.
- IV. Technical support for specific demands from the Brazilian Government.

For the definition of the Centre's Strategic Programs, effective from 2017 to 2022, efforts were concentrated on identifying its strategic challenges, of which overcoming will result in major economic and social impacts for the Country.

Thus, each strategic challenge has been articulated in a corresponding six-year research program, which resulted in the scope of the Centre's Scientific and Technological Plan (PC&T).

Each research program has its subprograms, of which contains specific projects to be developed over these six years. It is worth highlighting that each institutional project unfolds into a series of smaller and related projects at development in the Centre. Hereafter, organized data on each of the Strategic Programs are presented below.

Water and Energy, Waste and Sustainability Program

Challenge

To develop technologies that maximize the mineral industry's energy and water efficiency and the rational use of mineral resources, contributing to mitigating their impact.

Subprograms

I. Water and Energy: to develop technologies in themes that maximize water efficiency and the rational use of water in the mineral industry and contribute to reducing energy consumption in ore beneficiation, particularly in comminution operations (crushing and

grinding).

II. Waste: to develop technologies for the transformation and reprocessing of mining waste and tailings, for other industries.

III. Sustainability: to assess the social, economic and environmental impacts and propose solutions for the sustainability and for the circular economy of mineral sector's activities.

Strategic Minerals Program

Challenge

To contribute for the production of strategic minerals in a competitive and sustainable manner, reducing the Country's dependency on imports or increasing its production competitiveness for abundant mineral goods.

Subprograms

I. Rare Earths: To develop technologies that increase competitiveness, as well as studies on production chains of rare earth elements.

II. Agrominerals: To develop ore processing routes which contain essential nutrients for agriculture, development/production of reference materials, as well as evaluate the potential use of agents as remineralizers (slow release fertilizers in agriculture).

III. Other Strategic Minerals: to develop studies, characterization and technologies or technologic routes for the harnessing of other minerals/materials considered strategic, such as lithium, cobalt, graphite/graphene, niobium, among others.

Dimension Stone Program

Challenge

Contribute to increase competitiveness and sustainability of the ornamental rocks sector and of the architectural heritage.

Institutional Projects

I. Mining Optimization

II. Process and equipment innovation

III. Structuring of the support system for the conservation of built geological heritage

IV. Development of test methods and Life Cycle assessments

3. STRATEGIC PLANNING – SUPPORT AND INSTITUTIONAL MANAGEMENT AREAS

In order to support the Strategic Programs of the Scientific and Technological Areas, a series of institutional strategic projects were structured for the support and management areas, which are:

- I. Project for Deployment of the new Organizational Structure
- II. Project for Structuring the Scientific and Technological Plan and its Governance
- III. Project for the Implementation of Laboratories
- IV. Project for Restructuring of the Technological Innovation Center (NIT) and for Definition of Intellectual Property Management Processes
- V. Project for Management of Human Resources and Competences Development
- VI. Project for Methodology Development for CETEM's Generated Impact Assessment
- VII. Project for Restructuring of Planning and Purchase Processes
- VIII. Project for Restructuring of CETEM's Communication Processes
- IX. Project for Encouraging Productivity Increase
- X. Project for Updating the Information and Communication Technology Master Plan
- XI. Project for Infrastructure and Laboratory Facilities Improvement