

**Research, Development
and Innovation Policy –
R&D+I Policy**

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1. Target audience

The target audience of the Research, Development and Innovation Policy (R&D+I Policy) comprises the Eletrobras companies.

2. Purpose

The purpose of this Policy is to foster, guide and prioritize research, development and innovation of the Eletrobras companies, aligned to guidelines set forth by the principal stockholder and to the institutional context of each company, thus increasing the synergy between actions and the innovation capacity by aligning them to both the strategic plan and the business plans.

3. Pillars

The R&D+I Policy is based on the following pillars:

- I. Long-term public policies set forth under the National Council for Energy Policy (CNPE) that define long-term strategies for the Brazilian energy sector.
- II. National Energy Plan that consolidates long-term planning for the Brazilian energy sector, as provided under CNPE's policies and guidelines.
- III. Ten-Year Energy Plan that presents the challenges for the domestic energy sector for a ten-year period.
- IV. National Development Action Plan for Science, Technology and Innovation that will drive Science and Technology development in Brazil.

- V. Productive Development Policy, which objective is to contribute to the sustainable long-term growth of the Brazilian economy.
- VI. Transformation Plan of the Eletrobras System, coordinated by the Eletrobras Transformation Management Committee (CGTE), whose objective is to contribute to the increase in available energy in a sustainable manner to further Brazil's social and economic development, where integrated operations of the Eletrobras companies make all the difference.
- VII. Strategic Action Program – PAE 2009-2012, that provides strategic corporate guidelines of the Eletrobras companies.
- VIII. Necessity to position Eletrobras as market leader to drive their innovative capacity.
- IX. Eletrobras companies R&D+I management, considered as short-, medium- and long-term corporate strategy, aligned and integrated to the strategic plan and to the business plans of the Eletrobras companies, to produce the basis for growth and competitiveness, and as a critical element to combine business sustainable growth with social and environmental responsibility.
- X. R&D+I management of the Eletrobras companies using systemic vision, guided by the technological innovation chain approach.
- XI. Advisory Council, whose objective is to assess whether projects comply with ethical values in research.

4. Objectives

The objectives of the R&D+I Policy are to:

- I. Strengthen Eletrobras in order to build an integrated, competitive and profitable company, and to foster growth of sustainable energy availability for Brazil's development.
- II. Search for technical solutions for the Eletrobras companies in order to act in an integrated and synergistic manner in energy business management to generate, as a competitiveness agent, greater and improved results using self-owned resources and/or by procuring in the Brazilian or foreign capital and financial markets.
- III. Create short-, medium and long-term strategic R&D+I investment plans aligned to the companies' strategies and to the strategic and business plans of the Eletrobras companies.
- IV. Seek full control of the technological innovation chain, at the scientific and technological level and the industrial level, in the strategic areas of the Eletrobras companies.
- V. Drive a technological development and innovation culture in strategic areas of the Eletrobras companies in order to reach the required conditions to compete in the domestic and international markets.
- VI. Reduce the degree of international technological dependency by developing domestic technologies for the electric energy sector.
- VII. Influence the implementation of domestic and sectorial policies, programs and fiscal/non-fiscal incentives for research,

development and innovation, especially those that address the electric sector, as well coordinate the procurement of resources to carry out the objectives.

- VIII. Build qualitative and quantitative technical and managerial human resources competencies of the Eletrobras companies, at compatible levels with research, development and innovation needs of the electric energy sector.
- IX. Stimulate the search for technological solutions in the energy sector that will meet the needs of the Eletrobras companies, taking into account their diversity in know-how and to promote Brazil's development.
- X. Optimize investments made on research, development and innovation of the Eletrobras companies, through the systemic action of integrated companies aligned to the strategic objectives and seeking network relationship and internal and external partnerships.
- XI. Contribute to the production and innovation systems in the various regions where Eletrobras companies operate, according to their specificities and aiming at systemic innovation that will boost the potential for success to be reached with regional development.

5. Overall action guidelines

Overall action guidelines to implement the R&D+I Policy are to:

- I. Structure strategic R&D+I management areas, directly subordinated to a management area within Eletrobras companies.

- II. Assess, share and replicate within Eletrobras companies the results ensuing from investments made in research, development and innovation, for the purpose of maximizing competitiveness that will reflect on energy production with quality, competitive prices and tariff modicity.
- III. Foster research, development and innovation of products, processes, methodologies and management in Eletrobras companies, thus ensuring the systematic and continuous search of trends in the external environment where they operate, characterizing those companies as innovative, with the purpose of adding value to results and replacing imported goods, thus reducing external dependency.
- IV. Ensure that a range of products, methodologies, services and processes ensuing from innovation and improvements are used by the Eletrobras companies as a means of establishing priorities to create new know-how, acquisition, replication, trade and transfer of technology between those companies.
- V. Assess opportunities to trade technologies (products, processes or services) ensuing from R&D+I projects via licenses, transfer, cessation or right of use.
- VI. Foster work in interdisciplinary committees by involving professionals from the scientific, industrial and governmental areas in order to pilot technological development processes of interest of the Eletrobras companies.
- VII. Maximize the use of Eletrobras Cepel as the R&D+I Center of the Eletrobras companies throughout the technological innovation chain and assistance to apply strategic technical know-how for Eletrobras.

- VIII. Incent cooperative mechanisms (networking and other) that coordinate interests and competencies to complement the potential of companies and the scientific community, i.e. incubated companies and consortiums. Likewise, cooperation should be encouraged between companies and the supply market.
- IX. Seek partnerships with R&D+I institutions abroad when they are not in place in Brazil, in order to meet Eletrobras's strategic demands to foster technological development.
- X. Maintain and improve laboratory infrastructure of Eletrobras to support research, development and innovation, sustaining strategic know-how for Eletrobras companies. Support the maintenance and expansion of the lab network, within the scope of the National and International Metrology System, in the areas of interest of the Eletrobras companies.
- XI. Foster measures to facilitate the adoption of this Policy in companies, to include:
- i. the integration of the innovation chain between both companies and outside institutions by aligning all areas involved in R&D+I activities (legal, financial, accounting, supplies, audits, R&D+I user areas);
 - ii. the integration of research and development lines within the scope of the Eletrobras companies, aiming at setting up major research lines and business opportunities, prioritizing cooperation actions and technical-scientific exchange between the companies, governmental agencies, universities, research centers and institutes, as well as other electric power utilities companies;

- iii. registration of partners to develop research, development and innovation projects with the Eletrobras companies;
 - iv. the alignment of R&D+I management processes and project management between Eletrobras companies;
 - v. standardized procedures, models of contract instruments and R&D+I research project documentation (software, product, methodology, process etc.) between Eletrobras companies;
 - vi. the definement of selection and prioritization criteria for R&D+I projects.
- XII. Define a set of indicators for R&D+I management in order to assess results and to improve processes, and to optimize innovation, applicability, replication of the Eletrobras companies, market penetration and effectiveness.
- XIII. Create and implement an Intellectual Property (IP) Policy.

6. Instruments

The following R&D+I Policy instruments to be developed, improved or expedited are:

- I. Strategic Technological Plan for short-, medium and long-term scenarios (5, 10 and 15 years, respectively).
- II. Research, Development and Innovation Action Plan, setting forth technological guidelines and identifying technological macro programs, strategic cooperation projects and networks for future themes.

- III. Normative Instruction providing for the systemization of management processes that address research, development and innovation in the companies.
- IV. Corporate Integration Committee for Research, Technological Development and Innovation (Cicop), comprised of a Council Board, coordinated by the Technology director of Eletrobras and formed by technical directors of the Eletrobras companies and the Engineering director of Eletrobras; and by a Technical Council coordinated by the Technology director and R&D+I representatives from all Eletrobras companies.
- V. A specific information system and the Cicop Portal, including, but not limited to, the following:
 - i. registration of partner institutions per area of expertise of interest of Eletrobras;
 - ii. database for researchers;
 - iii. database of experts from companies by their area of competence;
 - iv. intellectual property database;
 - v. information about workforce and equipment costs;
 - vi. proposed, ongoing and concluded projects;
 - vii. products developed and their status;
 - viii. specific legislation;
 - ix. R&D+I norms and procedures;

- x. R&D+I management discussion forum;
 - xi. R&D+I agenda of Eletrobras.
- VI. Technology Board of Eletrobras (DT) that coordinates the Research, Development and Innovation management of the Eletrobras companies by using coordination mechanisms between companies, government, institutions, partners, universities and research institutions and is responsible for integrating efforts to implement this Policy.
- VII. Research Center for Electric Energy (Eletrobras Cepel), the central executor of programs (research lines) and R&D+I projects for Eletrobras. It also operates under the coordination of DT and its guidelines to create and develop R&D+I policies and strategies, always in partnership with the companies, and also assists in the assessment of results, in managing technological know how and the application of strategic technical know how.
- VIII. Organization processes defined within the companies' scope for R&D+I management in order to set up an innovative organizational environment, to include:
- i. technological and market systematic mapping and prospecting;
 - ii. internal and external competence mapping;
 - iii. strategic management of R&D+I proposal and Project portfolio, encompassing risk/benefit evaluation and setting forth priorities;

- iv. systematic assessment of results from R&D+I portfolio and projects and processes in order to ensure: technological learning, financial results and company value, and to diversify products and services;
- v. technological know how management, including its dissemination and intellectual property.

7. Mechanisms and funding sources

Possible R&D+I mechanisms and funding sources include:

- I. Self-owned budget resources of the Eletrobras companies.
- II. Technological Development Fund (FDT), set up by Eletrobras on 14 Feb 1979, provided for under RES-130/1979, which allocates up to 0.5% (one half of one percent) of the annual stock capital for investments on R&D+I, energy efficiency and on Eletrobras Cepel.
- III. Resources provided for under Law 9.991, of 24 July 2000, providing for investments made on research and development and energy efficiency (% of the Net Operating Revenue of power utility companies, permission holders and authorized companies from the electric energy sector.
 - i. Itaipu Binational is waived from complying with Law 9.991, but should provide for R&D+I funding mechanisms that can place it at the same level as other companies.
- IV. Resources from the sector specific fund, the Scientific and Technological National Development Fund (FNDCT), under

specific program category called CT-ENERG, as provided for under Law 9.991 of 24 July 2000, and Decree 3.897 of 16 July 2001 that regulates it.

- V. Financial resources from other public funds that give support to Research, Development and Innovation.
- VI. Fiscal and non-fiscal incentives that include:
 - i. the disencumbering of technological production;
 - ii. the reduction of financial taxes;
 - iii. masters and doctors hired by companies and technological institutes;
 - iv. technology transfer and licensing.
- VII. Extra budgetary sources ensuing from participating in the income of companies and royalty shares for technology transfer and payment of technical support abroad.
- VIII. Resources from multilateral organizations and other international funding sources for technological development, such as the World Bank, BID and GEF.
- IX. National and/or state budgetary resources and other funding mechanisms for research and development of technological production of the sector.
- X. Resources ensuing from Clean Development Mechanism (CDM) – carbon credits.

8. Responsibilities

Responsibilities are allocated as follows:

Board of Executive Officers of Eletrobras – Approve the R&D+I Policy.

Technology Board of Eletrobras – Coordinate the implementation of this Policy.

Board of Executive Officers of the Eletrobras companies – Implement the R&D+I Policy.

Research Center for Electric Energy (Eletrobras Cepel) – Execute R&D+I projects according to their priority, as well as assays, tests, and calibrations for the Eletrobras companies and provide technical assistance to the Board of Technology of Eletrobras and other companies during the scientific and technological mapping and procurement in order to adopt this Policy.

Corporate Integration Committee for Research, Technological Development and Innovation (Cicop) – To coordinate the Eletrobras companies in order to facilitate the implementation of the R&D+I Policy in the companies.

Research, Development and Innovation area of each company – Perform R&D+I activities ensuing from this Policy in their company and integrate it with other companies, also carrying out the activities of internal and external procurement, management and implementation of results, intellectual property management resulting from R&D+I projects.

Technological Management Department (DTT) – Manage performance in alignment with R&D+I areas of the companies and

Eletrobras Cepel for Policy compliance, aiming at the continuous improvement of R&D+I management, norms and operational routines.

9. Glossary

Inter-American Development Bank (IDB)

Is the principal source of multilateral funding and know how for sustainable economic, social and institutional development in Latin America and the Caribbean. The IDB Group is comprised of the Inter-American Development Bank, Inter-American Investment Corporation (IIC) and the Multilateral Investment Fund (MIF). The IIC addresses funding of medium and small-size companies, whereas Fumin fosters the growth of the private sector by providing for non-reimbursable technical cooperation investments, focusing on micro companies.

Innovation Structure

Innovation process model, a system, characterized by the following elements: company innovation; interaction with other companies and research institutions; the institutional structure based upon which companies operate; the role of demand. [Oslo Manual – Guidelines for Collecting and Interpreting Data on Innovation – 3rd ed., OECD, 2005]

Technological Innovation Chain

A set of R&D activities classified under categories that define the following phases: directed basic research, applied research, experimental development, first model, pioneer batch and market placement. [Aneel Manual, 2008]

Global Environmental Facility (GEF)

Worldwide network of partners founded in 1991 by 178 countries, international institutions, non-governmental organizations and the private sector to give support to developing countries via the funding of environmental protection and sustainable development initiatives.

Normative Instruction

Normative act that systematically defines and specifies the procedure to carry out a given company activity.

R&D+I - Research, Development and Innovation

Encompasses innovation chain activities from the scientific and technological level with the generation of know how, to the industrial level where products are placed into the market, encompassing aspects related to the interaction with other research companies and institutions.

Intellectual Property (IP)

Are the rights to innovation in all fields of human activity, scientific breakthroughs, designs and industrial models, industrial brands, trade and service, commercial names and denominations, protection against unfair competition of performers, media broadcasting, as well as other rights related to intellectual activity um the industrial, scientific, literary and artistic field.

10. Effectiveness

This Policy will be effective as of 14 July 2009, as set forth by the Executive Board of the Eletrobras companies via RES-0658/2009.



Eletrobras