

Brazil
 A Country for All
 Federal Government
 Brazil Technology Net
 www.redebrasil.gov.br
 Marcelo de Carvalho Lopes
 RBT Executive Secretary
 MCT Secretary of Computer Science Policy
 Partners:
 Eletrobrás
 Petrobrás
 Embrapa

Brazil Net of Technology
 National Expenses from GNP on R&D
 Year: 2000

	BRAZIL	OECD	RATE
% GNP invested on R&D	1.07	2.2	2.2
% GNP invested on R&D by the entrepreneurial sector	0.4	1.39	3.5
% GNP invested on R&D by the government	0.67	0.81	0.82

OECD – Organization for Economic Cooperation and Development
 Source: PINTEC-IBGE / ANPEI

Brazil Net of Technology
 Applied Resources on R & D - 2000

	Millions R\$	Millions \$ PPC	%	%GNP
Total	10,548	11,974	100	0.96
Public Expenses	6,032	6,848	57.19	0.55
Federal Expenses	3,627	4,118	34.39	0.33
Budget	2,518	2,859	23.88	0.23
Post-Graduation	1,109	1,259	10.51	0.1
State Expenses	2,405	2,730	22.8	0.22
Budget	871	989	8.26	0.8
Post-Graduation	1,534	1,741	14.54	0.14
Entrepreneurial Expenses	4,516	5,127	42.81	0.42
Companies	4,372	4,964	41.45	0.4
Post-Graduation	143.6	163	1.36	0.02

Source: Federal Government Integrated System on Financial Administration (Siafi).
 Special extraction carried through by the Federal Service of Data Processing (Serpro) and
 Industrial Research on Technological Innovation (Pintec) from the Brazilian Institute on
 Geography and Statistics (IBGE)

Brazil Net of Technology
 Technological Innovation on the Brazilian Industry

- The R&D must be understood as the creative core from the scientific and technological activities.
- To the Companies the R&D is not the only way of knowledge creation.
- R&D is an input to the technological innovation process.
- R&D can be developed inside the own Company, it can be done by the acquisition of goods, services and external knowledge.

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Companies that implemented Innovation on the Period 1998-2000

32% Companies that have innovated

68% Companies that have not innovated

Source: PINTEC-IBGE/ANPEI

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Kinds of Innovation

14% Product

6% Process

11% Product and Process

69% Did not implemented

Source: PINTEC-IBGE/ANPEI

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Kinds of Innovation – Aspects

- The research involves innovations to the market and to the own Company.
- From all companies that implemented product innovation, only 23.5% declared that the product was new to the market.
- To the innovation of process, this proportion is 11%.
- In short, only 4% from the total of the Companies launched new products in the market, and 3% launched new processes to the market.

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Companies that innovated to the market in relation to the origin of its capital

	Total Brazil	National	Foreigner
Total	72,005	69,788	2,218
Innovative Companies	22,698	21,326	1,372
Product Innovative Companies	12,658	11,546	1,112
% market innovations	23.5	20.4	56.1
Process Innovative Companies	18,160	17,110	1,050
% market innovations	11	8.9	44.7

Source: PINTEC-IBGE/ANPEI

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Relevance of the innovative activities assigned by the companies that introduced innovation

Innovative Activities from the national capital companies	Low importance and no execution (%)
Internal activities of R&D	67
External acquisition of R&D	92
Other external knowledge acquisition	86
Machines and equipments acquisition	23
Technological innovation introduction on the market	73
Industrial project and other technical preparations	57

Source: PINTEC-IBGE/ANPEI

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Brazil: Federal government expenses on Research and Development (R&D), by agencies 2000-2002 (on thousands R\$)

Agency / Budget Unity	2000	2001	2002
Total	3,154,634	3,409,664	3,017,141
Electoral Justice	106	87	257
Ministry of Agricultural and Provision	683,760	666,554	606,663
Ministry of Science and Technology	1,290,785	1,509,144	1,208,461
Ministry of Culture	395	391	-
Ministry of Defense	44,507	44,487	32,982
Ministry of Education	534,562	479,477	481,277
Ministry of National Integration	37,510	5,918	1,924
Ministry of Health	553,442	690,160	662,208
Ministry of Environment	8,896	13,220	14,757
Ministry of Mines and Energy	-	227	359
Ministry of Agrarian Development	-	-	-
Ministry of Development, Industry and Foreign Trade	-	-	161
Ministry of Sports and Tourism	-	-	584
Ministry of Planning, Budget and Management	-	-	-
Ministry of Job and Employment	-	-	-
Presidency of Republic	671	-	7,508

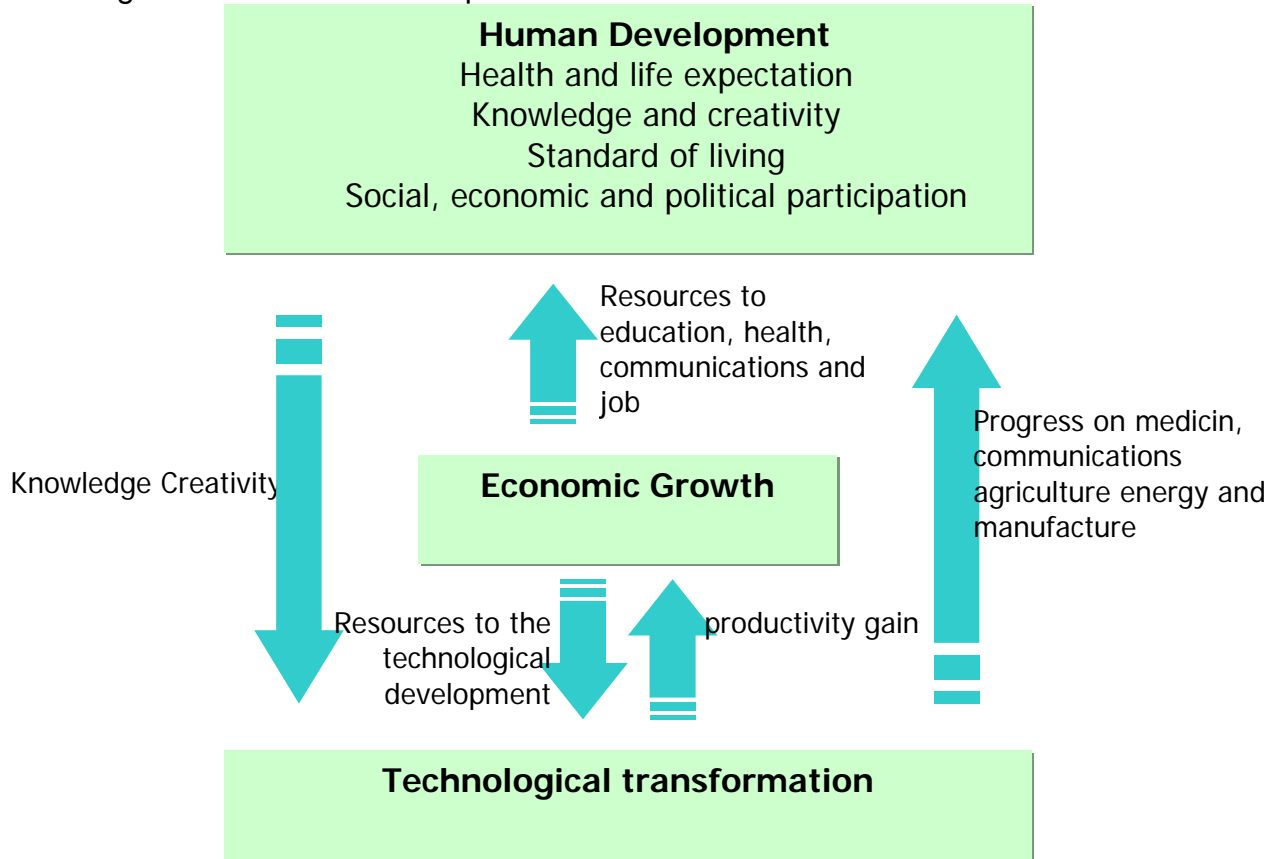
Source: PINTEC-IBGE/ANPEI

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Law N° 10,837 – from January, 16th 2004

Funds	PL
CT-Aero	22,817,887
CT-Agro	53,241,735
CT-Amazon	26,560,000
CT-Biotec	22,817,887
CT-Energ	143,551,997
CT-Espacial	1,050,000
CT-Hydro	42,082,751
CT-Info	30,976,000
CT-Infra	302,252,591
CT-Mineral	5,772,368
CT-Petro	517,038,723
CT-Health	53,241,735
CT-Transpo	2,595,524
CT-FVA	213,679,244
Total Expense	601,908,063
Total Res. Cont.	835,770,379
General Sum	1,437,678,442

Brazil Net of Technology
Technological and Human Development



Source: UNDP 2001

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Technological Development related factors

- Incentive
- Business
- Environment
 - Financing
 - Legislation
 - Capacity of Commercial Promotion
 - Companies Institutional Articulation
- Companies
- Universities
 - Main objective
- Technology

Brazil Net of Technology
Main Objective of BNT

To promote the federal government institutional articulation so as to propitiate the efficient interaction between public administration, Brazilian university, companies, financial agents, to the technological development of the local productive sectors, attending to the general guidelines:

- I – To stimulate the technology net development;
- II – To approximate the local research center companies to the fomentation agencies aiming the technological development;
- III – To articulate the working groups formation between companies and research centers;
- IV – To develop articulated technological projects that can foster the competitive substitution of goods and services entry on strategic sectors.

Decree nº 4,776 from July, 10th 2003

Brazil Net of Technology
Managerial structure of BNT

Managing Committee of
Institutional Articulation

Executive Secretary

Advisory Boarding

Brazil Net of Technology

Strategic Sectors

Decision-making factors:

Federal Government political guidelines;

Potential of result reproduction on the production chains;

Action focus on the technological development encouragement by the entrepreneurial sector;

The cross-relations between the productive chains must be considered. The petroleum chain, for example, is provided by the chains that furnishes to the automotive, electrical, metallurgical, sanitation sector and others.

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Priority Sectors

Petroleum, Natural Gas, Mining, Power Energy and Renewable, Agribusiness.

1. Predictable investments volume;
2. Productive chain dynamism;
3. National capital head companies.

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Main actions from BNT

1. Identification of Entrepreneurial Technological Demands;
2. Mapping of Technological Support Services;
3. Articulation of Projects for the Competitive Substitution of Entries and Value Aggregation for Exports.

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Project Articulation on BNT

Companies

Opportunity

Project

University

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Articulation of Projects for the Competitive Substitution of Entries and Value Aggregation for Exports

- a) Preparation of Projects Portfolios;

- b) Identification of Companies and Universities for the Projects Execution;
- c) Application of Mechanisms for the Financing of Projects.

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Regional Action of BNT

Head Companies

Federal Institutions

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Financing System

Net 1

Net 2

Net N

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Articulated Actors on the regional nets

Government

Universities

Money suppliers

Hear companies

Furnishing companies

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Main Regional Actions

- Project Articulation;
- Commercial Promotion;
- International Cooperation;
- Entrepreneurial Development;
- Integration on the Net;
- Technical Seminars execution.

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International Cooperation

The international cooperation serves as an instrument to raise the commercial and joint technological development possibilities with countries of interest.

- Head companies, as Petrobrás, on the fields of petroleum and gas, can help on the internationalization process of its local suppliers;
- The right definition of the target countries is fundamental to the success of the actions.

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Integration on the Net

- Substitution of Imported Inputs;
- Development of New Business;
- System Offer;
- Joint Commercial Actions.

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Importation Substitution

Historical – 2003

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Edict CTPetro -2003

- Edict: MST-BNT/FINEP/CTPetro – Value: R\$ 4 million;
- Focus: development of material and equipments which are presently provided only

by foreign suppliers;

- Construction: Petrobrás has defined the specific issues for product development. There were 67 projects received and 13 approved;
- Judgement: projects were evaluated by Petrobrás and FINEP experts, from the different thematic areas involved.

Brazil Net of Technology 2003 Approved Projects – CTPetro

Electronic Protocol	Project Initials	Project Title	Initial	FU	Intervenient Company
40	CBV350P6	LOW OUTFLOW COMPRESSOR TO 6 BAR ENTRY PRESSURE	UFMG	MG	JUNQUEIRA COMPRESSORS AND MACHINES LTD
47	BIOLACTEC	DEVELOPMENT OF BIOPOLYMERS TO BE ADDED TO PORTLAND CEMENT TO THE ATTAINMENT OF FLEXIBLE PASTRY	LACTEC	PR	CORN PRODUCTS BRASIL
1	ECOMADEIRA	PRODUCTION OF PLASTIC WOOD FROM LUBRICANT OIL POST USED UP PACKAGES	UFRJ	RJ	KROWN INDUSTRY AND COMMERCE OF MACHINES AND EQUIPMENTS
23	MONITOR-FO	FIBER OPTICS MONITORING SYSTEMS TO WELLS AND UNDERSEA EQUIPMENTS	PUC-Rio	RJ	GAVEA SENSORS
49	MEDRUS	GAS OUTFLOW METTER BY ULTRASOUND TO RESIDENTIAL USE	CTGAS	RN	LANDIS+GYR MESURING EQUIPMENTS LTD.
54	GERINF	INFORMATION AND INDUSTRIAL AUTOMATION PROCESS MANAGEMENT IN THE OIL SECTOR	UFRN	RN	PROJECON ADVISING

Brazil Net of Technology 2003 Approved Projects – CTPetro

17	PLASPETRO	PETROCHEMICAL RESIDUES AND EFFLUENT TREATMENT SYSTEM THROUGH THERMAL PLASMA	UFRN	RN	NORTHEAST TRANSFORMER INDUSTRY AND COMMERCE LTD
9	DUTO	PRODUCT AND SERVICES NATIONALIZATION TO DUCTS INTERNAL AND EXTERNAL CORROSION MONITORING	UFRGS	RS	SACOR SIDEROTÉCNICA S.A.
4	MANILHA	DEVELOPMENT OF A HIGH CAPACITY LOAD PIPE	UFRGS	RS	KOCH METALLURGIC S.A.
22	ATUADOR	SAFE FAILURE ACTUATOR TO THE OIL INDUSTRY	UFRGS	RS	COESTER
14	CLP SIL-2	LOGICAL-PROGRAMABLE CONTROLLERS FOLLOWING THE REQUIREMENTS OF SIL-2, IN ACCORDANCE TO THE IEC-61508/61511 AND PETROBRÁS N-2595 RULES	UFRGS	RS	ALTUS
5	NOVAUB	PUMPING UNITIES	UFRGS	RS	DAMBROZ S/A

43	PPFIBRA	DEVELOPMENT OF HIGH TENACITY POLYPROPYLENE FIBER (IPP) FROM HMS-PP	IPEN	SP	EMBRARAD - RADIATION BRAZILIAN COMPANY LTD.
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Edict CTenerg -2003

- Edict: MCT-RTB/FINEP/CTenerg – Value: R\$ 2 million;
- Focus: development of equipments on the solar and aeolic energy fields attend specially the Ministry of Mines and Energy Universalization Program;
- Construction: the Ministry of Mines and Energy defined the equipments that will be required to be developed. There were 18 projects received and 7 approved;
- Judgement: the projects were evaluated by an appreciation commission consisting of representatives from Ministry of Science and Technology, Ministry of Mines and Energy, from FINEP and from CEPEL.

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2003 Approved Projects – CTenerg

Project	Institution	Intervenient Company
Aerogenerator of 5KW	UNICAMP SP	1- Eletrovento Ltd. 2- Tectrol Electrical and Electronic Equipments Ltd.
Aerogenerator of 10 KW	UFSC SC	1- Milano - Mechanics and Metallurgic Ltd. 2- APPE – Special Projects Advisor Ltd. 3- WEG Industries S/A
Aerogenerator of 5KW	UERJ RJ	ENERSUD Industry and Energetical Solutions Ltd.
Dimensioning, production and tests on acid-lead batteries to be use on photovoltaic systems	LACTEC PR	RONDOPAR – Lead and Derivatives Ltd.
Autocommutate Converter CC/CA for use on Independent Photovoltaic systems using Nobreak	UFCE CE	Microsoltecnologia Ltd.
Aeolic Turbine of Vertical Axle	PUC/RS RS	Interchange Electro Mechanic Ltd.
50KW Aeolic Generator with Horizontal Axle Propeller	ITA SP	Dynamis Industry and Commerce Ltd.

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Projects on the condition of “ordered”

- CTenerg: INPE/SP Projects (R\$ 750 thousands); Pilot Plant/RS for the fabrication of photovoltaic modules with national technology (R\$ 2.5 millions);

- CTMineral: project for the development of a “dry weaver’s loom”/ES (R\$ 400 thousand).

Brazil Net of Technology
2003 Promoted Events

- International Seminar on Technological and Industrial Development, November, 10th and 11th 2003 – FIRJAN/RJ;
- Training for BNT Regional Multipliers, September, 2nd and 3rd 2003 – MCT/DF.

BNT Historical 2004

Brazil Net of Technology
Edict

MCT/FINEP/RBT Ação Transversal 01/2004

- Edict: Public Call MCT/FINEP/Ação Transversal RBT 01/2004 – Value: R\$ 13.2 million;
- Focus: Equipment, product and service technological research and development projects attractive to the oil, natural gas and power energy productive chains;
- Construction: Petrobrás has defined the specific themes to the product development. There were 81 projects received and 25 approved;
- Judgement: Projects were evaluated by FINEP experts.

Brazil Net of Technology
Edict

MCT/FINEP/RBT Ação Transversal 01/2004

<i>Breakaway Valve</i>	UFRGS	COESTER
Development of Programmable Controllers Integrated to <i>Fieldbus Foundation and Profibus</i> Field Nets	UFRGS	ALTUS
Imperfection Locator by Traveler Waives	FURB	ECIL E DOCUMENTTA
Development of <i>Tubings</i> 3% Chrome with Greater Corrosion Resistance by CO ₂ to the Oil and Gas Exploration and Production	INT	V&M DO BRASIL
Development of Aluminium Alloy Cylinders to Natural Gas Conditioning and Transportation	INT	WHITE MARTINS

Brazil Net of Technology
Edict

MCT/FINEP/RBT Ação Transversal 01/2004

Conformation Routes to the Fabrication of Metallic Sealing and Light Cylinders to GNV	UFF	WHITE MARTINS (SILBRÁS)
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Oil Temperature Optical Sensors and Windings on Force Transformers	UFSC	TREETECH
Development of a Controlling and Managing System to the Provision of Electric Energy through the Internet	USP	CCK
Photovoltaic System Optimization	UFCG	INTERCHANGE LETROMECHANIC
Development of a Differential Relay to IT Protection Using Fiber Optics as a Guiding Line	USP	REASON
Brazil Net of Technology Edict MCT/FINEP/RBT Ação Transversal 01/2004		
Natural Gas Passage Heater Automatic Control System	UFRGS	GERALCOOP
Battery Charging Aeolic System	UFCG	ENERSUD
Multipoint Temperature Measure Optical System	PUC-RJ	GÁVEA SENSORS
Ultrasound Sensor Carrier System for Hull Inspection	IME	MWA
Modeling and Optimization of the Process of Filamentary Winding to Heterogeneous Materials	UFRJ	POLYPLASTER
Brazil Net of Technology Edict MCT/FINEP/RBT Ação Transversal 01/2004		
Production of Activated Coal to Absorb Natural Gas	UNIMEP	MULTIVÁCUO
Development of Sensors to the Detection of On-line Incipient Flaws on Power Transformers	CGTI	ITAIPU TRANSF E B&M
Geotechnical Integrated Monitoring System to Security Evaluation on Ducts and Barrages Using Fiber Optic Sensors	PUC-RJ	GÁVEA SENSORS E CONCREMAT

Ultrasound Transducers to Non-Destructive Corrosion Inspection Systems on Metallic Structures at the Oil and Natural Gas Industry	USP	PIPEWAY
Brazil Net of Technology Edict MCT/FINEP/RBT Ação Transversal 01/2004		
Development of a High Frequency Inversor to Photovoltaic Systems	UFCG	MICROSOL
Development and Optimization of Absorption Refrigerators and Heat Exchanger for Exhaustion Gases	UFPR	NILKO METALLURGIC
Development of Catalyser for Water Shift Reactions on High Temperatures to CO Utilization on FCC Processes	UNIFACS	FCC E SENTEX
Detector of Rural Distribution Nets and Transmission Lines Absences	UFMG	ATITEL E CATAGUAZES LEOPOLDINA
Thermoelectric Plant Fuel Remote Management System	FUMSOFT	CONCERT

Brazil Net of Technology
Agribusiness Action 2004

- Edict Agribusiness Action 2004. Value R\$ 2 million;
- Focus: Equipment, product and service technological research and development projects attractive to the agribusiness sector productive chains;
- Construction: Embrapa has defined the specific themes to the product development. There were 28 projects received and 10 approved;
- Judgement: Projects were evaluated by FINEP experts.

Brazil Net of Technology
Agribusiness Action 2004

Peeler Machine	CNPDIÁ	Intecnial Ltd.
Beverage and Water Quality Certification Technology	CNPDIÁ	Enalta Technological Innovations
Online evaluation of agroindustrial products quality using nuclear magnetic resonance	CNPDIÁ	Gil Industrial Equipments Ltd.

Soil Compactness Evaluation Equipment	CNPDIA	Enalta Technological Innovations
Situated Input Distributor	CNPDIA	Agritillage Ind. e Com. Ltd.
Brazil Net of Technology Agribusiness Action 2004		
Development of Technology or Equipment for the Agrotoxic Use Reduction	CNPMA	Jacto S/A
Tropical Fruits Natural Scent	CNPAT	Flavor Tec Ltd e Unicamp, PUC-RS e University of Ponta Grossa
National Models of Mobile Sawmills Directed to Small and Medium Groups of Rural Producers	CNPF	Gil Industrial Equipments Ltd.
Biofuels Acquirement from Vegetable Oil through Catalytic Pirolisis Process	CNPSO	GET Ltd. E UNB

Brazil Net of Technology

Sectorial Investigation

- a) Import Substitution (equipment/materials) for the mining sector in Brazil – R\$ 100 thousands – CTMineral
- b) Import Substitution on the power energy distribution sector – R\$ 100 thousands – CTEnerg
- c) Import Substitution (machines, equipments and inputs) and value aggregation to the exportation to the Brazilian Agribusiness – R\$ 100 thousands – CTAgro
- d) Brazilian alternative renewable sources market potential investigation.

Brazil Net of Technology

BNT accomplished Seminars

- Alagoas (May)
- Caxias do Sul / RS (June)
- Rio Grande do Norte/RN (July)
- Sergipe/SE (August)
- Espírito Santo/ES (October)
- Tocantins/TO (November)

Brazil Net of Technology

Participation on Fairs

- Hanover Fair – April, 19th to 24th 2004, in Hanover/Germany;
- SBPC – July, 18th to 23rd 2004, in Cuiabá/MT;
- Rio Oil & Gas 2004 – October, 04th to 07th 2004, in Rio de Janeiro/RJ;
- FIPEN – 1º Industrial Forum of Productivity & Business – November, 09th to 11th 2004, in Contagem/MG.

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Public Calls in Process – 2005

Brazil Net of Technology

Public Call MCT / FINEP

Ação Transversal RBT 01/2005

- Total Amount: R\$ 12 million.
- Resource Origin: CTPetro: 3 million; CTEnerg: 3 million; Petrobrás: 3 million; Eletrobrás: 3 million;
- Focus: Equipment, product and service technological research and development projects attractive to the oil, natural gas and power energy productive chains;
- Construction: Petrobrás and Eletrobrás has defined the specific themes to the product development.

Brazil Net of Technology

Agrobusiness Action 2005

- Total Amount: R\$ 1.5 million.
- Focus: Equipment, product and service technological research and development projects attractive to the agrobusiness productive chains;
- Construction: Embrapa has defined the specific themes to the product development.

In course projects – Edicts 2005

Brazil Net of Technology

Logic-Programmable Controllers

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 466,402.72;
- Partnership: Petrobrás / UFRGS / ALTUS Informatics Systems.

Brazil Net of Technology

Logic-Programmable Controllers

Partnership

- Petrobrás
- UFRGS
- ALTUS Informatics Systems.

Brazil Net of Technology

Safe Failure Actuator

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 488,352.40;

Brazil Net of Technology
Safe Failure Actuator
Partnership

- Petrobrás
- UFRGS
- COESTER Automation S.A.

Brazil Net of Technology
High Capacity Load Pipe

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 257,274.12;
- Partnership: Petrobrás / UFRGS / KOCH Metallurgic S.A.

Brazil Net of Technology
High Capacity Load Pipe

- Partnership
- Petrobrás
 - UFRGS
 - KOCH Metallurgic S.A.

Brazil Net of Technology
Pumping Unities

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 234,250.00;

Brazil Net of Technology
Pumping Unities

- Partnership
- Petrobrás
 - UFRGS
 - Dambroz S.A.

Brazil Net of Technology
Monitoring of Ducts Internal Corrosion

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 105,000.00;
- Partnership: Petrobrás / UFRGS / SACOR Siderotécnica S.A.

Brazil Net of Technology
Monitoring of Ducts Internal Corrosion

- Partnership
- Petrobrás
 - UFRGS
 - SACOR Siderotécnica S.A.

Brazil Net of Technology
Fiber Optics Monitoring Systems to Wells and Undersea Equipments

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 430,200.00;
- Partnership: Petrobrás / PUC-RJ / GAVEA Sensors and Measuring Systems Ltd.

Brazil Net of Technology

Fiber Optics Monitoring Systems to Wells and Undersea Equipments

Partnership

- Petrobrás
- PUC-RJ
- GAVEA Sensors and Measuring Systems Ltd.

Brazil Net of Technology

Production of Plastic Wood from Lubricant Oil Post Used Packages

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 499,930.00;
- Partnership: Petrobrás / IMA-UFRJ / KROWN Machines and Equipments Industry and Trade.

Brazil Net of Technology

Production of Plastic Wood from Lubricant Oil Post Used Packages

Partnership

- Petrobrás
- IMA-UFRJ
- KROWN

Brazil Net of Technology

Low Outflow Compressor to 6 Bar Entry Pressure

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 262,092.42;
- Partnership: Petrobrás / UFMG / IEL / JUNQUEIRA Compressors and Machines Ltd.

Brazil Net of Technology

Low Outflow Compressor to 6 Bar Entry Pressure

Partnership

- Petrobrás
- UFMG
- IEL
- JUNQUEIRA Ltd.

Brazil Net of Technology

Information Management and Industrial Automation Process in the Oil Sector

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 223,124.40;
- Partnership: Petrobrás / UFRN / PROJECON Consulting.

Brazil Net of Technology

Information Management and Industrial Automation Process in the Oil Sector
Partnership

- Petrobrás
- UFRN
- PROJECON Consulting

Brazil Net of Technology

Petrochemical Residues and Effluent Treatment System through Thermal Plasma

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 446,020.88.

Brazil Net of Technology

Petrochemical Residues and Effluent Treatment System through Thermal Plasma
Partnership

- Petrobrás
- UFRN
- Gas Technology Center – CTA
- Transnor Ltd.

Source: Hipas Laboratory – USA

Brazil Net of Technology

Development of High Tenacity Polypropylene Fiber (IPP) from HMS-PP

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 437,792.32.
- Partnership: Petrobrás / Power and Nuclear Research Institute / Embrarad Ltd.

Brazil Net of Technology

Development of High Tenacity Polypropylene Fiber (IPP) from HMS-PP
Partnership

- Petrobrás
- IPEN
- Embrarad Ltd.

Brazil Net of Technology

Development of Biopolymers to be Added to Portland Cement to the Attainment of Flexible Cements

- Opportunity Identification: Petrobrás material fields
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with Petrobrás, FINEP and Ministry of Mines and Energy;
- Financing: resources from the oil sectorial fund on the amount of R\$ 384,060.32.
- Partnership: Petrobrás / ENERC-UFPR / Corn Brazilian Products / LACTEC – Institute of Technology for the Development.

Brazil Net of Technology

Development of Biopolymers to be Added to Portland Cement to the Attainment of Flexible Cements

Partnership

- Petrobrás

- UFPR-ENERC
- LACTEC
- Corn Brazilian Products

Brazil Net of Technology

Autocommutate Converter CC/CA for use on Independent Photovoltaic systems using Nobreak

- Opportunity Identification: Defined by the Power Universalization Program from MME
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with MME and FINEP;
- Financing: resources from the oil sectorial fund on the amount of R\$ 200,304.90.
- Partnership: UFCE/ MICROSOL Technology Ltd.

Brazil Net of Technology

Autocommutate Converter CC/CA for use on Independent Photovoltaic systems using Nobreak

Partnership

- UFCE
- MICROSOL Technology Ltd

Brazil Net of Technology

Aerogenerator de 5KW

- Opportunity Identification: Defined by the Power Universalization Program from MME
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with MME and FINEP;
- Financing: resources from the oil sectorial fund on the amount of R\$ 300,000.00.
- Partnership: UERJ/UFPE/UFMS/ ENERSUD Energy and Energetic Solutions Ltd.

Brazil Net of Technology

Aerogenerator de 5KW

Partnership

- UERJ
- UFPE
- UFMS
- ENERSUD Energy and Energetic Solutions Ltd

Brazil Net of Technology

Development of a National Micro-Aerogenerator of 10KW

- Opportunity Identification: Defined by the Power Universalization Program from MME
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with MME and FINEP;
- Financing: resources from the oil sectorial fund on the amount of R\$ 270,403.00.
- Partnership: UFSC/WEG Industries S.A./Mechanic and Metallurgic Ltd / Special Projects Advisor Ltd.

Brazil Net of Technology

Development of a National Micro-Aerogenerator of 10KW

Partnership

- UFSC
- WEG S.A
- Mechanic and Metallurgic Ltd

- Special Projects Advisor Ltd.

Brazil Net of Technology

Aerogenerator of 5KW for Distributed Generation

- Opportunity Identification: Defined by the Power Universalization Program from MME
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with MME and FINEP;
- Financing: resources from the oil sectorial fund on the amount of R\$ 292,500.00.
- Partnership: UNICAMP / TECTROL Electric and Electronic Equipments Ltd. / ELETROVENTO Ltd.

Brazil Net of Technology

Aerogenerator of 5KW for Distributed Generation

Partnership

- UNICAMP
- TECTROL Ltd.
- ELETROVENTO Ltd.

Brazil Net of Technology

Acid-lead batteries to be use on photovoltaic systems

- Opportunity Identification: Defined by the Power Universalization Program from MME
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with MME and FINEP;
- Financing: resources from the oil sectorial fund on the amount of R\$ 220,159.00.
- Partnership: LACTEC / RONDOPAR Lead and Derivatives Ltd

Brazil Net of Technology

Acid-lead batteries to be use on photovoltaic systems

Brazil Net of Technology

Aeolic Turbine of Vertical Axle

- Opportunity Identification: Defined by the Power Universalization Program from MME
- Project Articulation: answer to edict launched by BNT/MCT on 2003 in partnership with MME and FINEP;
- Financing: resources from the energy sectorial fund on the amount of R\$ 221,860.00.
- Partnership: PUC-RS / INTERCHANGE Electro Mechanic Ltd

Brazil Net of Technology

Aeolic Turbine of Vertical Axle

Partnership

- PUC-RS
- INTERCHANGE Electro Mechanic Ltd.

Brazil Net of Technology

Development of a Radiometer for radiation measurement

- Opportunity Identification: Defined by the Power Universalization Program from MME
- Financing: resources from the energy sectorial fund on the amount of R\$ 220,100.00.
- Partnership: INPE / GAMA RHO Electronic Projects Ltd

Brazil Net of Technology

Development of a Radiometer for radiation measurement

Partnership

- INPE
- GAMA RHO Electronic Projects Ltd

Brazil Net of Technology

Low Noise Inversor for Small Engines Fostered by Photovoltaic Plates

- Opportunity Identification: Defined by the Power Universalization Program from MME
- Financing: resources from the energy sectorial fund on the amount of R\$ 300,000.00.
- Partnership: INPE / ORBITAL Engineering Ltd

Brazil Net of Technology

Low Noise Inversor for Small Engines Fostered by Photovoltaic Plates

Partnership

- INPE
- ORBITAL Engineering Ltd

Brazil Net of Technology

Low Cost Solar Simulator

- Opportunity Identification: Defined by the Power Universalization Program from MME
- Financing: resources from the energy sectorial fund on the amount of R\$ 229,600.00.
- Partnership: INPE / ORBITAL Engineering Ltd

Brazil Net of Technology

Low Cost Solar Simulator

Partnership

- INPE
- ORBITAL Engineering Ltd

Brazil Net of Technology

Pilot Plant of Photovoltaic Modules Production

- Opportunity Identification: Defined by the Power Universalization Program from MME
- Financing: CTEneg: R\$ 2,500,000; Petrobrás: R\$ 564,060; ELETROSUL: R\$ 564,060; CEEE: R\$ 371,880; PUC-RS: R\$ 629,380.79. TOTAL AMOUNT: R\$ 4 million;
- Partnership: PUC-RS / Petrobrás / ELETROSUL / CEEE-RS

Brazil Net of Technology

Pilot Plant of Photovoltaic Modules Production

Partnership

- PUC-RS
- Petrobrás
- ELETROSUL
- CEEE-RS

Aluminium

Glass

E.V.A

Cell

E.V.A
Tedlar

