2016 Results Report
The year 2016 was special for ITAIPU Binacional, for the production of clean and renewable energy reached an unprecedented 103.09 million MWh, a new world record for electric power generation in a single power plant.

However, Itaipu goes beyond the increasingly high levels of production and availability indexes and acts, as part of its mission, to promote the sustainable development of Paraguay and Brazil. The environmental actions of Itaipu, which form the Cultivating Good Water program (CAB), were recognized by the UN as the best practice in water resources management among other 40 developed around the world. The CAB methodology reformulated the vision of the territory, going from a border-oriented approach limited to municipalities bordering the reservoir to an organization based on integrated watershed management. The partnership with all social actors allows the action in the basin, sub-basin and micro basin to positively impact the availability and quality of water and also the sustainability of the territory.

Research and development have transformed environmental liabilities, such as animal and biomass waste, abundant in the West Region of Paraná, in biogas and organic fertilizer benefiting producers, residents and the water quality in the territory. These current and future demands also involve energy storage. In this sense, the transfer of technology and scientific research in nickel/sodium batteries and the nationalization of components of hydrogen generation plants make up hybrid alternatives and storage mechanisms of solar, wind and biomass energy, among others.

Sustainable mobility is another concern of ITAIPU, supporting research and development, as well as the use of electric and biomass-powered vehicles, making up a vehicle sharing system, a practice that is already a reality in Itaipu and in PTI and that can be replicated in larger scale, serving large population centers and thus contributing to sustainability.

The great strength of our programs is in the partnerships. The West Developing Program is an example of how common interests can benefit an entire community represented by entities of the Western Region of Paraná that include associations of municipalities, associations of industry, agriculture, cooperatives, micro and small business entities, universities, research and extension entities, among others, which act in this program with the objective of promoting the sustainable economic development of the territory.

The creation of the Itaipu Technological Park (PTI) was fundamental for corporate sustainability, especially in actions linked to one of the three pillars that mark the company’s mission, which is regional development. The business model that complements the generation of energy with strategic actions of regional development and social and environmental programs is recognized as a reference for hydroelectric enterprises.
PTI is the result of the capacity of ITAIPU’s staff with the accumulation of knowledge in the most varied areas that enabled the design, construction, assembly, maintenance and operation of the world’s largest power plant in electricity production. Once again, the partnership was the key point in the constitution of PTI, where the State University of Western Paraná and the Institute of Applied Technology and Innovation (ITA) established the conditions to design an enterprise that transformed the old accommodations of the dam builders into a territory for the production of knowledge and citizenship.

**PTI supports the mission of ITAIPU Binacional by implementing projects related to technological, territorial and tourism development, in articulation with various government entities, universities and the private sector.**

Technological development is an important part for the technological upgrade, which the Hydroelectric Power Plant will demand throughout its life, as a way to maintain the high performance and quality of the generated energy. The Research and Development Centers implemented, through the Itaipu Corporate University, have as objectives to act on the frontier of knowledge, in themes aligned with the challenges of the power plant and the electric sector. The performance in the promotion of technical-scientific studies together with the plant’s technical area team has allowed the support of processes of engineering, operation and maintenance, positively impacting on aspects of dam safety and energy production. This action, carried out in a convergent and complementary way with the Technical Board, allows to maintain the focus on the production process and to rely on the PTI Foundation teams in the study, research and development of solutions to incorporate them, later, to the Plant. The training of human resources has proved to be an important product of this process. Many of the technicians and engineers who applied for the renovation of the ITAIPU staff come from this process.

The territorial development is supported by PTI through the generation of knowledge, with results that range from teacher training in scientific culture, professional training, support to the implementation of undergraduate university courses, postgraduate courses with master’s and doctorate programs, allowing, this way, the technical and scientific growth in the region. The results come from the retention of talents, the formation of companies, as well as the attraction of companies and research centers to the region.

The promotion of tourism deserved special attention from ITAIPU, initially professionalizing the tourist service in the visit to the Plant, a matter that deserved the recognition of the World Tourism Organization (WTO) in 2016, granting the Tourism Excellence and Innovation Award, in the category “Research, Technology and Innovation”, by the innovative model of operation of the Itaipu’s Tourist Complex, whose results are fully applied in education, science, technology and innovation programs, thus promoting a sustainable model that covers the costs of personnel operation, logistics and improvements in service and has achieved several awards of excellence for the quality of the tours and service. Special emphasis is placed on PTI’s sustainability model, where ITAIPU adopted a model similar to the one used by the Fraunhofer Institutes in Germany. In this sense, the non-refundable base funding that is provided to the Itaipu Technological Park Foundation allowed to generate a technical and scientific capacity that made possible to multiply by three the resources generated with the provision of specialized technical services, also attracting resources in cooperation projects to improve the competitiveness of companies, support public policies, develop educational projects, promote science and technology.

The Itaipu Technological Park is a legacy of ITAIPU that bets on the seed of knowledge as a transforming factor of a society. Its fruits are already seen in more than 7,000 people, linked to more than 50 entities installed in the Park, which circulate daily through its facilities. This legacy is no longer exclusive to Itaipu, it is of the whole society, which is represented there by countless partners. In addition, we are encouraged, as public managers, to strengthen their actions and consolidate PTI as a fundamental entity for the Western Region, the State of Paraná and Brazil.

**Jorge M. Samek**
Brazilian CEO - Itaipu Binacional
BOARD OF DIRECTORS

Superintendent Director
Juan Carlos Sotuyo

Technical Director
Claudio Issamy Osako

Administrative and Financial Director
Valdir Antonio Ferreira

PROJECT MANAGEMENT OFFICE

Manager
Andréa Pavei Schmoeller

Project Analyst
Patrícia Jacoby Kafka

COMMUNICATION DEPARTMENT

Manager
Eloiza Dal Pozzo Chibiaqui

Journalism
Leilane Dalla Benetta
Poliana Corrêa
Vacy Alvaro
Vanessa Peron
Yan Gilberto Alves de Lima (intern)
Welyton Manoel Nunes da Silva (intern)

Advertising and marketing
Luiz Gustavo Grzybowski
Francieli Padilha Bras Costa
Gabriel Mendes Campos (intern)
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pti@pti.org.br
Presentation

- Itaipu Technological Park (PTI)
  - History
  - Historical Dates

- Itaipu Technological Park Foundation – Brazil (FPTI-BR)
  - Mission, Vision, Strategic Goals and Values
  - Organizational Structure
  - Corporate Process
  - Territory of Action
ITAIPU TECHNOLOGICAL PARK (PTI)

Contributing, in a decisive way, to the development of the western region of Paraná was the great motivator for the creation of the Itaipu Technological Park (PTI) in 2003. A technological park promotes the synergy between companies, research centers, laboratories and educational institutions making the connection among education, research, technology, innovation and business. Together, these activities generate development in the most diverse dimensions. PTI is installed in the former accommodations of the workers who built the Itaipu Power Plant and, with an innovative operation model, these spaces gave rise to teaching and research institutions, classrooms, laboratories, business incubators, government entities, private enterprises and society in favor of scientific and technological development, innovation, training of skills, technical qualification and the strengthening of productive activities of the territory.

Every day, about 7 thousand people from more than 40 nationalities pass by PTI.

Learn more about the work developed in PTI by positioning your QR Code reader in the image.
History

PTI came from the expansion of Itaipu Binacional’s mission of “generating quality electricity with social and environmental responsibility, boosting sustainable economic, tourism and technological development in Brazil and Paraguay”.

In partnership with the Institute of Applied Technology and Innovation (Itai) and the State University of Western Paraná (Unioeste), Itaipu articulated the implementation of an appropriate environment for technological development.

In this context, PTI characterizes itself as a strategic space to reach the development proposed by Itaipu in the region and is positioned in the West territory of Paraná as one of the environments to promote innovation.
Historical Dates

The intention to create a science, technology and innovation environment in Foz do Iguaçu was agreed by 37 Brazilian and Paraguayan authorities, with the signing of the Letter of Intent for the creation of the Itaipu Technological Park. This new environment would have the following objective:

“Promoting the integration of Latin American countries through the mobilization of government entities, entities representing the organized civil society, academic entities, research institutions and entities that promote sustainable development, aiming at economic, social and cultural development based on education, science and technology, generation of employment, work and income”.

In the same year, Itaipu and the other partners of the project began the negotiations for the implementation of PTI. The new technological park already had a definite place: the old accommodations of the workers who built the Itaipu Power Plant and which were abandoned since the end of the construction, in the mid 80’s.

May 23rd, 2003
Signing of the Letter of Intent for the creation of PTI

August 19th, 2003
Launching of PTI’s Foundation Stone

October 12th, 2003
Beginning of the activities of PTI in the provisional headquarters, in the campus of Unioeste

April 1st, 2004
Beginning of the construction of PTI. During the ceremony, the Brazilian CEO of Itaipu, Jorge Samek, symbolically started the work by pounding with a hammer on one of the walls of the old accommodations

October 12th, 2004
PTI’s official opening
**December 21st, 2005**
Creation of the Itaipu Technological Park Foundation – Brazil

**2007**
The PTI Foundation takes on the management of the Itaipu’s Tourist Complex

**2013**
The City Council of Foz do Iguaçu delivers a motion of applause to PTI for its 10th anniversary and for transforming the city into a pole of knowledge

**2015**
The PTI Foundation develops more than 50 actions in the areas of education, research, innovation, business and sustainable tourism

**2016**
The PTI Foundation is awarded by World Tourism Organization (WTO) for "Excellence and Innovation in Tourism", considered as an example of the application of sustainable tourism for development
ITAIPU TECHNOLOGICAL PARK FOUNDATION – BRAZIL (FPTI-BR)

The Itaipu Technological Park Foundation - Brazil, a private non-profit civil organization, is the entity responsible for the management of PTI, through the articulation with the partner institutions and also through the execution of a set of activities of Education and Extension, Research and Development and Innovation and Business. The PTI Foundation relates to different actors linked to four propellers - Universities and Research Centers; Business; Governments and Organized Civil Society. This way, PTI promotes interaction among these institutions, forming strategic partnerships.
Mission

“Promoting sustainable territorial development through education, science, technology, innovation, culture and entrepreneurship”.

Vision

“Making the Itaipu Technological Park, by 2020, recognized as a reference in promoting sustainable territorial development”.

Ethical principles

- Respect;
- Cooperation;
- Integration;
- Solidarity;
- Equity;
- Transparency;
- Honesty;
- Commitment.

Strategic Goals

- Promoting scientific and technological development and innovation of interest of Itaipu and the territory;
- Contributing to the formation of competences, technical qualification and appreciation of the human being in the territory;
- Promoting actions that contribute to social, cultural and environmental development in the territory;
  - Contributing to the strengthening of productive activities of the territory;
- Continuous improvement of the management of the PTI - Brazil Foundation to add value to its purposes;
  - Guaranteeing the economic and financial balance of the PTI Foundation.
**Organizational Structure**

In the organizational structure conceived by the PTI Foundation, the directors, functional areas and other departments are focused on joint support for the projects developed in the Park.

The management bodies that form the basis of the organizational structure are: the Board of Trustees, the Audit Committee and the Board of Directors.

<table>
<thead>
<tr>
<th>Board of Trustees:</th>
<th>Audit Committee</th>
<th>Board of Directors</th>
</tr>
</thead>
<tbody>
<tr>
<td>It deliberates on all matters related to the status and strategic planning of the PTI Foundation.</td>
<td>It deliberates on all accounting matters related to the PTI Foundation.</td>
<td>It directs the strategic actions of the PTI Foundation, through the application of its statute and its normative base.</td>
</tr>
<tr>
<td><strong>Composition in 2016</strong></td>
<td><strong>Composition in 2016</strong></td>
<td><strong>Composition in 2016</strong></td>
</tr>
<tr>
<td><strong>Full Members</strong></td>
<td><strong>Full Members</strong></td>
<td><strong>Juan Carlos Sotuyo</strong> - Superintendent Director</td>
</tr>
<tr>
<td><strong>Jorge Habib Hanna El Khouri</strong> - president (Itaipu)</td>
<td><strong>Marcos Paulo Bonamigo</strong> (Itaipu)</td>
<td><strong>Claudio Issamy Osako</strong> - Technical Director</td>
</tr>
<tr>
<td><strong>Daniel de Andrade Ribeiro</strong> (Itaipu)</td>
<td><strong>Rodrigo Silva Cunha</strong> (Itaipu)</td>
<td><strong>Valdir Antonio Ferreira</strong> - Administrative and Financial Director</td>
</tr>
<tr>
<td><strong>David Rodrigues Krug</strong> (Itaipu)</td>
<td><strong>Rosana Marcela Schmidt</strong> (Itaipu)</td>
<td></td>
</tr>
<tr>
<td><strong>Newton Bríao Marques</strong> (Itaipu)</td>
<td><strong>Alternate Members</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Orestes Hotz</strong> (Sebrae)</td>
<td><strong>Gilmar de Oliveira</strong> (Itaipu)</td>
<td></td>
</tr>
<tr>
<td><strong>Roseli Bernadete Dahlém</strong> (IFPR)</td>
<td><strong>Simone Freire Nicolau</strong> (Itaipu)</td>
<td></td>
</tr>
<tr>
<td><strong>Heitor Benhur de Abreu Angeli</strong> (Public Sector)</td>
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<tr>
<td><strong>Alternate Members</strong></td>
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<tr>
<td><strong>Augusto Cesar Stein</strong> (Sebrae)</td>
<td></td>
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<tr>
<td><strong>Celso Ribeiro Novais</strong> (Itaipu)</td>
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<tr>
<td><strong>Marcos Antonio Baumgartner</strong> (Itaipu)</td>
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<tr>
<td><strong>Nelson de Castro Neto</strong> (IFPR)</td>
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<tr>
<td><strong>Clarisse Adriana Bertoco Damião</strong> (Public Sector)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Staff

- 457 employees
  - 18 women
  - 17 men
  - 9 employees with disabilities

- 220 women
  - 237 men

- 237 grant holders in projects
  - 52 volunteers
  - 33 interns
  - 17 apprentices

- 21 Elementary School
- 130 High School
- 177 Bachelor's Degree
- 99 Postgraduate Degree
- 22 Master's Degree
- 8 Doctorate

- 237 positions
  - 237 men
Corporate Processes

In 2016 the PTI Foundation approved the following corporate documents: Code of Conduct, Information and Communication Security Policy and Intellectual Property Policy.

The Code of Conduct sets forth the ethical principles that must guide the relations of the PTI Foundation with its various audiences. Its launch is the result of a participatory construction of employees of the PTI Foundation from the ethical principles in their own institution: Respect; Cooperation; Integration; Solidarity; Equity; Transparency; Honesty and Commitment.

The Information Security and Communications Policy is based on the PTI Foundation’s Statute, Strategic Planning and Code of Conduct and on the standards governing Information and Communication Security (ICS), in accordance with current Brazilian legislation. The Policy consists of a set of guidelines aimed at providing the Foundation with principles, guidelines, criteria and instruments that ensure the availability, integrity, confidentiality and authenticity of data and information. In addition, it contains guidelines in which the employees guide and develop their activities in favor of ICS.

The Intellectual Property and Technology Transfer Policy of the Itaipu Technological Park Foundation aims at protecting the intellectual production of the institution and its partners, guiding its transfer to society in support of innovation and the competitive insertion of the regional, state and national economy, in alignment with the Strategic Planning of the PTI-Brazil Foundation.
Territory of Action

The PTI Foundation carries out actions for Territorial Development in 54 municipalities in the Western Region of Paraná. These are grouped by the Association of Municipalities of the Western Region of Paraná (AMOP) and by the Coordination of the Commercial and Business Associations of the West of Paraná (CACIOPAR).

Despite the focus on the territory, the PTI Foundation expands its results to the whole country, because the demands in which it works strengthen the development of national technologies, innovation, new business and sustainability.
Infrastructure

- Sharing
- Academic and Research Spaces
- Event Spaces
- Service Spaces
- Information and Communication Technology (ICT) Structure
PTI occupies an area of 75.54 hectares, of which 49,822 m² are built. In the space, several entities co-exist, characterizing the place as an environment of connections and shared use, fostering exchanges of experiences and integration between people and institutions. The model aims at the best use of resources invested in infrastructure, while seeking the optimization and complementation of skills, through network operation.

PTI closed 2016 with more than 7 thousand inhabitants in activities related to education, research, innovation and business.
Academic and Research Spaces

The academic and research spaces are points of connection for students and researchers to have adequate support for the development of their studies. PTI has structure in several areas, listed below, with research centers, laboratories and classrooms, which are open to researchers not only from the universities installed in the park, but also from other institutions. For example, at the Center for Advanced Studies on Dam Safety (Ceasb), researchers and students interested in the subject can use the laboratory in a shared way and develop their research.

- **55 classrooms shared by 03 education institutions**
- **62 laboratories**
- **04 research centers**
**Installed Laboratories and Centers – PTI Foundation**

- Latin American Center of Open Technologies (Celab)
- Center for Advanced Studies on Dam Safety (Cesa)
- Center for Advanced Studies on Protection of Strategic Structures (CEAPE)
- Hydroinformatics International Center (CIH)
- Nickel-Sodium Batteries Laboratory
- Industrial Batteries Laboratory
- Free Software Laboratory (LABSOL)
- Biogas Laboratory
- Laboratory and Hydrogen Production Plant
- LASEC² – Laboratory of Electronic Security of Cybernetic Communications
- Automation Laboratory (LASSE)
- Simulation Laboratory (LASSE)
- Engineer Enedina Alves Marques Multi-user Laboratory – Chromatography
- Engineer Enedina Alves Marques Multi-user Laboratory – Limnology
- Engineer Enedina Alves Marques Multi-user Laboratory – Molecular Biology
- Engineer Enedina Alves Marques Multi-user Laboratory – Landscape Ecology
- Engineer Enedina Alves Marques Multi-user Laboratory – Electronic Microscopy

**Unila**

- Microscopy and Image Laboratory
- Advanced Microscopy Laboratory
- Multidisciplinary Laboratories (Chemistry II)
- Multidisciplinary Laboratories (Physics II)
- Multidisciplinary Laboratories (Engineering)
- Multidisciplinary Laboratories (Biology)
- Multidisciplinary Laboratories (Physics)
- Multidisciplinary Laboratories (Chemistry)
- Computer Laboratory I
- Computer Laboratory III
- Laboratory Block 15 - Interdisciplinary Laboratory of Physical Sciences
- 2 Laboratories Science Station

**Installed Laboratories – Municipal Technology Center (NTM)**

- Computer Laboratory

**Installed Laboratories – Open University of Brazil (UAB)**

- 2 Computer Laboratories

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**Unioeste**

- Computer Graphics Laboratory
- DETAE - Laboratory of Development of Technology Applied to Education
- Mathematics teaching laboratory
- Computational Laboratory
- Machine Laboratory
- Graphic Simulation Laboratory
- Distance Teaching Laboratory

- High-voltage Laboratory
- Computer Laboratory
- Engine Laboratory
- Simulation Laboratory (SIMULAB)
- Simulation Laboratory (SIMULAB) II
- Knowledge Management Laboratory
- Heating Laboratory
- Heating Laboratory II

- Electric Machines Laboratory
- Physics Laboratory I
- Physics Laboratory II
- Physics Laboratory III
- Control Laboratory
- Laboratory of studies on robotics
- Instrumentation Laboratory I
- Industrial Automation Laboratory
- Electric Circuit Laboratory
- Instrumentation Laboratory II
- Data Communication Laboratory

- LABI – Bioinformatics Laboratory
- Laboratory of machine elements
- Material Laboratory
- Laboratory of oven preparation
- Chemistry Laboratory
- Metallography Laboratory
- Metrology Laboratory
Engineer Enedina Alves Marques
Multi-user Laboratory

The multi-user laboratory allows the interaction among researchers from the PTI Foundation, Itaipu, Unila, Unioeste and other partner institutions, with the constant exchange of knowledge. It is a set of laboratories with modern and differentiated equipment, such as a chromatograph and a scanning electron microscope (SEM), capable of producing high resolution images of the surface of a sample. Currently, the space is configured for the areas of biology and chemistry, but it can expand the areas of competence. The total area of the laboratory is 351 m².

The sharing of knowledge is already a reality in the Laboratory:

The master student Alexandre Della Flora is from Porto Alegre (RS) and his research project is in the area of micropollutants. He emphasizes that the Enedina Alves Marques Laboratory has the appropriate equipment for the research and highlights the interaction with other researchers. “It’s very gratifying. I had an opportunity during my graduation when I lived abroad. This cultural exchange and knowledge helps a lot”. Unila’s teacher Aline Theodoro Toci, does research in the area of food. “This integration of areas provides a greater view of the problem for its resolution”.

Engineer Enedina Alves Marques

The choice of the laboratory’s name was a tribute to an important figure of the Brazilian engineering. Enedina Alves Marques, born in Curitiba, in the year 1931, became the first woman to complete the engineering course in Paraná, in the Federal University of Paraná. She was also the first black engineer in Brazil.
With 4.000m² of total area, the Paulo Freire Library has in its collection 90 thousand books. In 2016, 65 thousand people visited the place, which besides promoting cultural and artistic exhibitions, shares the collections of the Federal University of Latin American Integration (Unila), the campus of the Open University of Brazil (UAB), the Center of Engineering and Exact Sciences of Unioeste, Itaipu Binacional and the PTI Foundation.

The library also promotes the qualification of users for access and use of international scientific databases.
Event Spaces

PTI is also the stage of national and international events that discuss and promote scientific and technological development, as well as the cultural integration of Latin America.

101 events held in 2016
29.089 participants in events held in 2016

<table>
<thead>
<tr>
<th>Total of events held</th>
<th>1.193</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of participants in events</td>
<td>260.567</td>
</tr>
</tbody>
</table>

In addition to acting in the planning and organization of events, the PTI Foundation also supports its partners by providing a complete and adequate infrastructure for events.

In 2016, the following events were highlighted:

**Latin American Free Software Conference (Latinoware),** which gathered more than 5 thousand participants from more than 10 countries and also from 22 Brazilian States. Researchers, experts and collaborators presented hundreds of proposals and projects developed from free software programs and systems.
PTI Night Run, which in 2016 consolidated itself as one of the biggest sporting events in the western region, gathering more than 1,400 athletes from Brazil, Paraguay and Argentina.

In the Night Run, the modalities of Running, Walking and Individual Wheelchair for disabled people were practiced. In addition to promoting the practice of sports, encouraging the arrival of people from outside Foz do Iguaçu, stimulating sports tourism in the region, the objective of the event is to make the public know more about the actions developed in PTI and Itaipu, since, during the test, the initiatives of the two institutions are shown.

<table>
<thead>
<tr>
<th>Space</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Builder of Dams Movie Theater</td>
<td>800 people</td>
</tr>
<tr>
<td>César Lattes Auditorium</td>
<td>200 people</td>
</tr>
<tr>
<td>Florestan Fernandes Room 1</td>
<td>60 people</td>
</tr>
<tr>
<td>Florestan Fernandes Room 2</td>
<td>21 people</td>
</tr>
<tr>
<td>Florestan Fernandes Room 3</td>
<td>100 people</td>
</tr>
<tr>
<td>Mercosul Room 1</td>
<td>120 people</td>
</tr>
<tr>
<td>Mercosul Room 2</td>
<td>18 people</td>
</tr>
<tr>
<td>Milton Santos</td>
<td>70 people</td>
</tr>
</tbody>
</table>
Service Spaces

In order to meet the demand of the more than 7 thousand people who travel daily through the Itaipu Technological Park and tourists who visit the attractions of the Itaipu’s Tourist Complex, the following services are available:

**Spaces of common use in PTI**
- Post Office
- Bank Agency
- Ambulatory
- Automatic Teller Machines
- Copy Machines
- Coffee Shop
- Snack Bar
- 2 Restaurants

**Services available at Itaipu Tourist Complex**
- Exchange bureau
- Automatic Teller Machines
- Handcraft store
- Souvenir Store
- Restaurants
- Taxi service
Information and Communication Technology (ICT) Structure

The PTI Foundation maintains a modern ICT structure to meet the demands of laboratories, research centers, educational institutions and companies installed in the Park.

- 440 servers, which are the physical and virtual equipment used in the provision of IT services;
- 900 VoIP extension numbers;
- 840 e-mail accounts managed by the corporate e-mail solution Zimbra;
- 90TB of data volumetry, equivalent to 92,160 1GB of data;
- 250TB of backup volumetry, equivalent to 256,000 1GB of USB drives;
- 250Mbps of average link consumption, equivalent to 250 residences with 1Mbps links;
- 6,200 network points, representing the number of devices that can be connected to the physical network, such as computers, servers, VoIP phones, printers, among others;
- 20 km of Optical Fiber, which is higher than the distance between PTI and the Eco-museum (round trip);
- 237 IP cameras for the Park’s monitoring and security;
- 100 switches to connect, to the physical network, computers, servers, VoIP phones, printers, cameras, among others;
- 10 routers, which make the logical separation between the more than 135 networks of PTI, besides the connection with the operators Embratel and RNP;
- 135 access points, which provide access to the wireless network for more than 5,000 people simultaneously;
- 300Mbps dedicated link with Embratel, equivalent to 300 residences with 1Mbps links;
- 1Gbps dedicated link with RNP and POP-PR (UFPR), equivalent to 1,000 residences with 1Mbps link.
Tércio Pacitti Data Center

In 2016, the opening ceremony of the Data Center was held. The chosen name, Tércio Pacitti, is a tribute given to the pioneer and one of the greatest exponents of computing in Brazil. Tércio Pacitti was General Aeronautics Officer, Lieutenant General, professor and Dean of the Technological Institute of Aeronautics (ITA).

The Data Center guarantees the physical safety of the equipment and information related to the work executed by projects and partners of PTI. With electrical capacity of 500kva and prepared for cloud storage, it has potential to increase its capacity in 70%, enabling the formatting of new projects and partnerships. In 2016, the Data Center formalized the cooperation deal with NIC.BR to host a Traffic Exchange Point (PTT EX.Br), which allows a cost reduction and greater development of the Information Technology companies connected to this PTT in the region.
Research and Development

- Promotion of Research, Technological Development and Innovation
- Territorial Technological Antenna
- Office of Intelligence and Technological Innovation (EIITEC)
- Project Management Office (EGP)
- Latin American Center for Open Technologies (Celtab)
- Center for Advanced Studies on Protection of Strategic Structures (CEAPE)
- Hydroinformatics International Center (CIH)
- Center for Advanced Studies on Dam Safety (Ceasb)
- Laboratory of Automation and Simulation of Electrical Systems (Lasse)
- Center of Research on Hydrogen (NUPHI)
- Research and Development in Batteries
- Center for Sustainable Mobility (Mob-i)
- International Renewable Energy Center – Biogas (CIBiogás)
Research, Development and Innovation

The activities of PTI are developed within the spaces and projects of the various institutions of the park, and produce scientific, technological and innovation results. In terms of scientific and technological results, PTI, in collaboration with Itaipu Binacional, Universities and development agents, continuously supports scientific and technological production through the concession of grants and the promotion of R&D activities.

These activities are also supported by the Itaipu Corporate University (UCI), mainly through the Laboratory of Automation and Simulation of Electrical Systems (Lasse), the Center of Research on Hydrogen (NUPHI) and the Center for Advanced Studies on Dam Safety (Ceasb). The objective is to preserve the acquired knowledge for the constant improvement of the Itaipu Power Plant and to take this knowledge to other companies in the electric sector, having technology, research and the consequent knowledge management as allies.

Promotion of Research, Technological Development and Innovation

PTI, in collaboration with Itaipu Binacional, universities and development agents, continuously supports scientific and technological production through the concession of grants and the promotion of research, development and innovation activities.

In the year 2016, 225 new grants were awarded in various modalities. This meant an investment of around R$1,565,645 in the continued training of people, the main objective of the support and promotion strategy.

1,570 grants awarded since 2006

<table>
<thead>
<tr>
<th>Modality</th>
<th>Nº of Grants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meritum</td>
<td>8</td>
</tr>
<tr>
<td>Scientific Initiation</td>
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<td>Master’s</td>
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<td>Teaching Support</td>
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In terms of scientific production, we highlight some publications in chapters of national and international books, scientific journals and the participation of scholars and professionals in international events, consolidating the research in several areas of knowledge that have been developed in PTI. Some of the publications of 2016, by area of knowledge, are listed as follows:

**Management and development of Technology Parks**


**Dam Safety**


**Education**


**Geoprocessing**


**Territorial Development**


**Power Accumulators**


FERRACIN, RICARDO et al. Produção de Hidrogênio por eletrólise da água e uso em célula a combustível.

“FPTI has been financing Technological Initiation, Innovation, Technological Development and other modalities with grants in areas of expertise or specialized topics of real impact in solving relevant problems in Engineering, which often require interdisciplinary knowledge. The formation of such human resources enables the design, development and dissemination of methodologies, products, services and innovative technologies, and can trigger direct reflexes to regional development, through the generation of skills in Research, Development and Technological Innovation, public or private”

Rogério Luís Rizzi, PhD

Unioeste Professor and coordinator of Ceasb Research Project
Territorial Technological Antenna

In order to cope with the growing demand for technological information in the territory, FPTI is implementing the Territorial Technological Antenna (TTA) to offer information structured in bulletins and newsletters with topics of territorial and Regional Innovation System (SRI) interest.

Inspired by the good practices of surveillance and strategic intelligence of the Ministry of Science, Technology and Productive Innovation of Argentina, the FPTI in partnership with several actors of PTI and the territory, will be consolidating the TTA in order to provide studies and strategic information for decision making, helping public and private institutions in the definition of new projects and investments, identifying market potentialities, business and opportunities that contribute to the development of the territory.

For this purpose, in the year 2016, training and awareness-raising workshops on TTA and on the demands of studies and thematic priorities for action were initiated, as well as the structuring of a cooperation network with universities, cooperatives, associations, private and public institutions.
Office of Inteligence and Technological Innovation (EIITEC)

EIITEC is the space of support for various activities of scientific, technological and innovation development, regarding intellectual property.

It is responsible for assessing and meeting the technological and innovation demands that can be object of industrial protection and future trading, such as anteriority search, technological prospection, intellectual property and software registration, product confidentiality analysis, support in the drafting of licensing and assignment contracts – technological transference and legal advice in the fields of Science, Technology and Innovation. EIITEC also works guiding other areas of Basic Industrial Technology such as metrology, conformity test and standardization.

The Office offers services, guidelines and trainings for PTI and the territory. In August, 2016, in partnership with Unila, it trained 40 people in a short course of introduction to intellectual property and search for patents. In November, also in partnership with Unila, it carried out a workshop for patent writing, with 40 vacancies. In the same month, EIIIEC organized, together with the Innovation Regional System (SRI) of the West of Paraná and the Federal Technological University of Paraná (UTFPR) campus Medianeira, a lecture about intellectual property, aiming at raising the awareness of the region’s cooperatives and universities to the theme.

During 2016, 120 people participated in the events and lectures carried out by EIITEC. The Office also met 60 demands in services such as the drafting of legal instruments, instruments review, technical reports about various themes and anteriority searches of brands and patents, benefiting projects of the PTI Foundation, incubated companies and the external public.

**Partners:** PTI Foundation and Itaipu.

2016 Results Report
Project Management Office (EGP)

One of the first project management offices of the region, the EGP of the PTI Foundation, works with the project managers and teams giving advice on project elaboration and monitoring, providing management tools and contributing to the dissemination of a project management culture in the institution and also in the territory.

Two courses in this theme were developed, with workloads of 135 and 16 hours, offered in the distance learning and semi-distance learning modalities, with the monitoring of online tutors. In 2016, the trainings attended students from Unioeste, UFPR, ViraVida Project, Volunteer Force Project, enterprises incubated in PTI, health professionals from Brazil, Argentina and Paraguay, besides Itaipu’s and PTI’s workers.

223 trained people in 2016, being 90 professionals and students of the region.

Seeking to disseminate good practices of project management, stimulate the territorial development, through the exchange of experiences and knowledge, and bring together companies, universities, public and third sector institutions of the region, the Office organizes, annually, the Project Management Congress (GP Oeste). The 2016 edition included seven lectures and two workshops given by specialists from all over the country, reaching an audience of around 200 people.

“In 2016, Itaipu had the collaboration of the PTI Foundation, for the dissemination of knowledge in project management. Thirty employees, representing six areas, were trained in Paraguay. The Business Planning Department is working on the implementation of project management offices, for which it is important to have employees trained in GP. Currently, the Itaipu Business Plan is supported by the efficiency of the projects, because the knowledge and use of GP best practices is essential. Now, we plan to train 120 other professionals, thus ensuring a positive impact on the dissemination of GP practices throughout the institution”.

Luis López Lafuente
Engineer at Itaipu Binacional – Paraguay
Latin American Center for Open Technologies (Celtab)

Open technologies are a powerful Research and Development Tool and potential generator of solutions for the needs of Itaipu Binacional, as well as input for the formation of new enterprises.

The free software research is done at Celtab aiming at innovation. The knowledge of the Center is widespread through partnerships with public, private, academic research, promotion and production institutes.

In 2016, Celtab formalized a cooperation deal with Linux Professional Institute – LPI, for the development of actions in the region that promote the training of professionals in open source technologies.

The initial phase of this partnership seeks to identify, among the region’s high schools, institutions seeking to qualify for the Linux Essentials certification, the first one of the professional career. All the qualification process must be associated with an entrepreneurial project, in which the student gets to know one or more products in free software that can make up his or her service offer for the region in which he or she is inserted. In the higher education institutions, the goal is to introduce topics of the LPI Certifications, promoting the participation of these students in the offered certifications.

**Partners:** PTI Foundation, Itaipu and Linux Professional Institute

“In October 2013, I was selected by Celtab as a scholarship holder/researcher, where I started working on the maintenance and creation of modules for the Gallery Project, an open-source tool used by the Itaipu Power Plant for the management of photographic collections and archives. In 2015, I started working on the Super Wi-Fi project. Celtab positively contributed to my professional training, since I was able to work for the first time in research and development projects, thus gaining experience in new areas of activity in the technology field, which generated the opportunity to be part of the FPTI staff. Currently I am part of the group of analysts of the Research Pole of Information and Communication Technology (PPTIC).”

**Fabio Oliveira Barboza**
IT Analyst at Celtab

**Actions in 2016**

- 162 students from BP3, between Brazilians and Paraguayans trained for the use of free technologies in 2016 / 426 students trained in 4 years;
- 5 participations in technical events, such as Campus Party, Latinoware, III WCTI in 2016;
- 1 course of Scrum contracted in 2016
- 9 lectures in events, such as Meditec and International Symposium of Scientific Initiation of the University of São Paulo – SIICUSP;
- 5 projects carried out in the period / 23 in 4 years;
- 5 projects in progress;
- 12 active grants / 27 grants awarded in 4 years.
Ensuring safety, protection and defense of strategic structures through research in methodological, structural and systemic solutions is the goal of CEAPE². The center’s performance is based on four structural axes: Human Resources; Culture; Intelligence; and Science, Technology and Innovation.

In 2016, a Mutual Intention Protocol with the Brazilian Navy, the Brazilian Army, Itaipu and the PTI Foundation was approved with the purpose of establishing exchange and cooperation between projects in the areas of strategic structures safety, information and communication safety, cybernetic safety, information and communication technology, energy efficiency, renewable energies, engineering, logistics, security and sustainability.

The integration with the Brazilian Army, through the System Development Center (CDS), represented an important milestone for the PTI Foundation and CEAPE². The tools presented must serve as basis for various fronts used in the areas of Territorial and Information and Communication Technology Infrastructure Development of the PTI Foundation.

The Information Security and Communications Policy, elaborated for the PTI Foundation, establishes a culture of stimulating the adoption of new safety prevention measures, systematizing the treatment of incidents and adding good practices to the applied model of risk management.

**Partners:** PTI Foundation, Itaipu Information Office; Brazilian Navy and Brazilian Army.

**Other actions in 2016:**
- 7 lectures
- 8 participations in events
- 2 software projects executed
- 3 active research grants
- 45 people trained with knowledge of safe software development
- Workshop of Safe Software Development
- Safe Software Panel

“Security is a transversal activity, present in all processes, from the development of a software to the delivery of the final product. It must be a premise or there may be faults both in the way and in the product. If you do not have a minimum of security, you become vulnerable. Imagine in an institution such as the Foundation, which has knowledge, patents and obligations with partners that must be protected. The CEAPE² gives us this maturity when it comes to security”.

Colonel Carlos Roberto Sucha
Head of the Itaipu Information Office
Hydroinformatics International Center (CIH)

The CIH develops hydroinformatics solutions and tools for the sustainable management of water resources. The Center works with projects of Research and Development, treating the water theme in a broad way, with the development of applications, creation and application of methodologies for territory management and construction of knowledge.

In 2016, the CIH obtained the seal of Category 2 Center of the International Hydrological Program Network from Unesco (PHI – Unesco). This advancement includes CIH in the world network of specialized centers certified by PHI – Unesco to work with themes related to water management, enabling partnerships and international projects.

Territorial Management

Among the products developed in 2016, the System to Support Decision-making for the Intergovernmental Commission of the Plata Basin (CIC Plata) stood out. The tool helps technicians and managers of water resources from Argentina, Bolivia, Brazil, Paraguay and Uruguay, allowing the access, processing and analysis of information that support directly the integrated management of water resources of the Plata Basin.

The project “Monitoring of micropollutants (pesticides) in surface waters in the Paraná 3 Watershed” also began, together with technicians and researchers from Itaipu Binacional and Unila, for the quality control of the surface waters regarding the pesticides glyphosate and atrazine, commonly used in the region.
The CIH obtained, in 2016, the scientific and applied validation of the methodology "Participative Quality Index (IQP)", jointly developed by Itaipu Binacional and the Brazilian Federation of Direct Planting and Irrigation (FEBRAPD), as an instrument for quality evaluation of the Direct Planting System used in agricultural areas. This system conciliates the agricultural and cattle raising with environment protection, favoring the infiltration of water into the soil, reducing erosion and the emission of greenhouse gases, besides stabilizing the productivity in the medium term, increasing the profitability of the producers.

Throughout the project, 214 evaluations of the IQP Methodology were carried out with rural producers, 95 agricultural areas were sampled and 84 laboratory reports with soil chemical analysis on rural properties in the region were made. The results serve to raise the awareness of rural producers in order to improve their production.

Another result obtained by the Center, in 2016, was the creation of the deployment plan of Spatial Data Infrastructure (IDE) based on Free Software in the Energy Company of Minas Gerais (CEMIG), which will allow the availability of geospatial data through a stable environment, in order to help the decision-making.

The CIH develops territorial management methodologies with the use of geoprocessing and the systematization of information collected in the web environment (with the use of free software).

In 2016, it was identified the potential for production of biogas and biofertilizers in the Brazilian cities through the project BiogásFert. The project culminated in a web tool that allows the visualization of this information.

In terms of energy prospection for the territory's management, the CIH concluded the "Inventory of solar photovoltaic power generation potential of Paraná", which verifies the solar photovoltaic power generation potential of each city and makes an electricity projection in the State up to 2050.

Besides the Inventory, the CIH began the "Studies and modeling on water energy potential and its offers and demands" in the BP3. The analysis includes the identification of potential points that enable the installation of enterprises considering a better water exploitation.

### Environmental Education and Trainings in the Paraná 3 Watershed (BP3)

| 70 | formed Environmental Education managers |
| 58 | leaders of Management Committees |
| 255 | people in the Composition of the PAP 3 Learning Community (Action-Participant Research) |
| 55 | Learning Communities with 6.500 members of PAP 4 formed |
| 21 | eco-pedagogical projects monitoring workshops |
| 21 | youngsters from BP3’s Young Educator Collective graduated in Territorial Management |
| 17 | youngsters trained as Web Rádio Água Community Communicators |

110 trained people from 19 countries
Communication and Publications

In May 2016, the CIH organized the International Seminar about Environment and Development, with focus on the Water, Energy and Development nexus. The event resulted in the release of the Special Scientific Magazine – Development and Environment with focus on the Water, Energy and Food nexus in partnership with the postgraduate program in Environment and Development of UFPR.

**Web Radio Água:** portal produced by technicians and people from the community with contents about water, energy and sustainability. In 2016 the version 2 of Web Radio Água Platform and Podcast was launched for Android and IOS devices.

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**Partners:** PTI Foundation, Itaipu, International Hydrological Program-UNESCO (IHP-Unesco), International Center for Renewable Energies with Emphasis on Biogas (CIBiogás-ER), Energy Company of Minas Gerais (CEMIG), United Nations Organization for Food and Agriculture (FAO), Brazilian Agricultural Research Corporation (Embrapa), Federal University of Viçosa (UFV), Federal Technological University of Paraná (UTFPR), National Institute of Space Research (INPE) and Brazilian Federation of Direct Planting and Irrigation (FEBRAPDP).

“In 1980 I took the Direct Planting course and, in 1983, I applied it on my lands. Last year, the researchers evaluated my property in soil conservation and soybean disease. Then they followed the development of the plant, the rooting, from beginning to end, and approved that the monitoring and the fungicide that I was passing did not give soy disease. It was a very important job, because in addition to learning, we started to do things the right way. Today the technology has advanced and, it is inevitable, you have to follow it”.

Francisco Mendes
Rural producer of Marechal Cândido Rondon, participant in the Project Stimulus to the Quality of the Direct Planting System in BP.
Center for Advanced Studies on Dam Safety (Ceasb)

The Center for Advanced Studies on Dam Safety works as a center of applied research directed to strategic solutions on Dam Safety, which help the decision-making of Itaipu’s engineers. The work of the Center enables an increase in the comprehension of phenomena related to the dam and the turbines, having as consequence an increase in safety and in the dam’s lifespan.

In 2016, 58 scholarship holders took part in activities of Ceasb in the modalities of scientific initiation, technological development and innovation; master’s degrees and doctorates. The Center promotes the integration between the technical area and several partner universities, promoting the stimulus to scientific research, knowledge exchange and the consequent training of professionals capable of acting in the area of dam safety.

In 2016, Ceasb executed 23 Research, Development and Innovation projects in Hydroelectric Power Plants, supporting the Itaipu Corporate University (UCI). Among the results, divided by area, it’s possible to list the following:

**Geotechnics**
Development of new modules and tools for softwares of statistical modeling of geological/geotechnical parameters of rocks, and in several studies applied to the earthfill and rockfill dam.

**3D Modeling**
- Modeling of civil, mechanical, water and sewer structures of Itaipu.
- Expansion of the PDF3D base available to Itaipu’s engineers in the technical files.
- Manuals and video manuals of assembly and disassembly, in 3D, of components of the generating units.
- Continuity of the 3D printing of excerpts of Itaipu’s dam.

“...The same motivation that I received at the beginning of my research career today I observe in my students and in the researchers that I meet at the follow-up meetings and training events held at Ceasb. In my conception Ceasb has become a model of practical scientific research program, especially for inciting questions and challenges in the various areas of knowledge within dam safety engineering, but also for the appreciation of the professional in training”.

Prof. Msc. Patrícia Casarotto de Oliveira
Professor at the Federal Technological University of Paraná (UTFPR – Toledo).
Simulation
- Computer Numerical Simulation of the hydraulic instability phenomena of Itaipu’s turbine.
- Simulation of the thermal structural effects of the dam.
- Simulation of the interaction fluid structure of the spillway chute.

Virtual Environments
In 2016, it was created the virtual environment for the operation training of a Hydroelectric Power Plant called Geração em Jogo, aimed, mainly, at the general public.

Database
In 2016, in addition to projects of statistical analyses and data integration, such as the Integrated Data Processing, Web System for the Analysis of Signal Processing and Hydrometeorological data, it was made the integration of data models with the three-dimensional representation of the power plant, in order to introduce an holistic view of the structure and help the decision-making process.

Interinstitutional Doctorate
Ceasb promoted the implantation of the first Doctorate Program in Numerical Methods Applied to Engineering, in partnership with UFPR. The theses of the 23 trained professionals who acted in research demanded by Itaipu were compiled in the first edition of the book “Numerical Methods Applied to the Analysis of Dam Safety”.

Partners: PTI Foundation; Itaipu; Itaipu Corporate University (UCI); State University of Western Paraná (Unioeste); Federal University of Paraná (UFPR); Brazilian Committee on Dams; Federal University of Bahia (UFBA); State University of Maringá (UEM); GeoKriagagem; and Geological Service of Paraná (Mineropar).
Laboratory of Automation and Simulation of Electrical Systems (Lasse)

Lasse develops solutions that have increased the number of information on the performance of Itaipu’s equipment and systems associated with the generation and transmission of energy, improving its monitoring. The laboratory contributes to the technological updating process of the Plant.

In 2016, the following systems were developed and delivered by Lasse:

- **Industrial Systems in Cloud (SINUV):** design of a Protection, Automation and Control system (PAC) that aims at developing a validation model of the concept of communication without cabling, which will provide knowledge for decision making.

- **Analysis of Multi-Agent System Records (ARSMA):** applications and/or application functions to evaluate the operation of Itaipu. Currently, the plant has several equipment that generate a large amount of records, and the analysis is manual. ARSMA allows greater agility and reliability to this process, besides reducing costs.

- **Record and Phasor Analysis System (SARF):** software for visualization and analysis of records of perturbations and phasor data of the electrical system. A customized solution for Itaipu, SARF replaces proprietary software, and is capable of interpreting records of the equipment used for monitoring at the Plant and acquiring phasor data from phasor concentrators in operation.

Services applicable to the Electric Sector

Lasse performs technical and technological services through a Real Time Digital Simulator (RTDS), a simulator developed for the application in electrical power systems. In 2016, services were provided to Itaipu and General Electric. A total of 53 services have already been carried out using this platform.

**Partners:** PTI Foundation, Itaipu, Itai, Lactec Institutes, Unioeste, Unila, University of São Paulo (USP), Federal University of Santa Catarina (UFSC).

“GE’s understanding is that the PTI simulator is the most complete one in Brazil. PTI is an attractive option, both for the technical, infrastructure and equipment question, and for the experience of the professionals of the park. Lasse technical support is an important part of this partnership. They are knowledgeable in simulation of electrical systems and protection systems. GE has its own laboratories, which are in Canada and England, but I choose to use the PTI structure, which is interesting for the reduction of costs and I can count on the experience of the team”.

Denys Lellys, Application Engineer at GE Brazil.

“Technical qualification, competence, experience, proadvity and focus are some of the easily identifiable characteristics of the Lasse team I work with. Another highlight is the way in which processes and the capacity of project management improve continuously. It is visible, for example, that efforts were made to improve these disciplines and that a great result was achieved: Lasse is not far behind in comparison to the large companies available in the market”.

Galileu Godoy Terada, from Itaipu’s Engineering Superintendence.
Hydrogen is considered the fuel of the future, due to its efficiency and for not generating greenhouse effect pollutants. One of the ways to produce hydrogen is from electricity, which is used in the water electrolysis. This allows the exploitation of the Brazilian hydroelectric potential in the spillage periods of the hydroelectric power plants, in addition to wind and solar power sources. The research on hydrogen as an energy vector was boosted with the installation of the Hydrogen Production Plant in PTI, in 2014.

Among the studies performed in NUPHI there is the one about the life cycle of hydrogen, the viability of production from hydroelectric energy and the use in fuel cells for charging electric vehicles’ batteries and auxiliary energy systems.

In 2016 happened the disassembly of all the component parts of the Plant, with the purpose of studying the production system and nationalizing its internal components, specifically the electrolyzer and its system of control monitoring. This study provided the generation of deep knowledge about the components of the electrolytic production of hydrogen, allowing the training of human resources, technology studies and material tests, aiming at adapting this technology to the national production reality in the future.

Also in 2016 technical and scientific partnerships were consolidated with the Federal University of Paraná (UFPR), the University of Latin American Integration (UNILA) and the Federal University of São Carlos (UFSCar), in order to propitiate the generation of research on the topic Hydrogen. NUPHI’s research generated three scientific articles published in national and international magazines. With the acquired knowledge, new ideas about the topic of energy storage were elaborated for Eletronorte and other energy companies.

**Partners:** PTI Foundation and Itaipu Corporate University (UCI).

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“Hydrogen is considered to be the economy of the future. They say that today we are in the oil age and that later we are going to enter the hydrogen economy. I think NUPHI is on the right track, because currently the problem of the economy is lack of technological development. And what the project is doing is thinking about a future issue, of developing this technological base to be prepared for a stage where we will need more energy from renewable sources, where hydrogen would fit.”

Giovani Gaspar
Representative of Neshy Renewable Energies and McPhy Energy in Brazil
Battery Research and Development

Research on nickel and sodium chloride batteries aims at dominating scientific and technological processes to enable future domestic battery production. In 2016, after four years of research and knowledge transfer process among the Swiss company Battery Consult, the FPTI and the Electric Energy Research Center (Cepel), Brazilian researchers finished the development and assembly of two battery prototypes.

Technical and scientific competences have been established, which can be applied in electric and hybrid vehicle projects, and energy storage solutions, together with wind and photovoltaic generation systems, improving the reliability, availability and quality of the supplied power.

The research and development in batteries represent, for the country, a potential of large-scale battery production, with nationalization of components, allowing the reduction of the technological dependency on foreign suppliers.

**Partners:** PTI Foundation, Itaipu, Cepel and Financier of Studies and Projects (Finep).

“Electrochemical storage in batteries is a very good option because of its flexibility and convenience, if the price is acceptable and the exploitation of the materials for its production does not cause other damages to the nature. Sodium batteries, with cooking salt available in abundance, and nickel or iron as their electrode material, meet this condition. Other requirements are safety and operation regardless the climatic conditions of the environment, which sodium batteries also meet. Brazil is a large country that needs to produce distributed electricity, which means the need for storage. With the technology of sodium batteries there is the opportunity to produce the necessary storage capacity alone, with local value generation itself”.

Cord-Henrich Dustmann
Battery Consult Director
Center for Sustainable Mobility (Mob-i)

Integrated with the Itaipu Intelligent Mobility Program, Mob-i develops actions and projects related to sustainable mobility. The Center supports the management and operation of electric vehicle monitoring pilot projects in the cities of Brasília, Curitiba and Itaipu Hydroelectric Power Plant, through the mobi.me platform, in partnership with the Center for Engineering and Innovation of Mobility Industries (CEiiA).

In 2016, the 25 vehicles monitored in the pilot projects covered 116,700 kilometers. The use of electric vehicles contributes to the reduction of emissions of greenhouse gases, which allows a reduction of the climatic changes and consequent increase in the quality of life.

In December, the Intelligent Sharing System (SCI) was launched, which includes ten Twizy vehicles, manufactured by Renault, for shared use in Itaipu and PTI, optimizing the use of the vehicle fleet and contributing to the environment by encouraging sustainable practices.

The Center also collaborates with the definition of public policies and regulation, and training of specialists in the area. As a complementary action, Mob-i technically advises academics who are part of Unioeste’s extension projects that develop vehicle prototypes for participation in national and international competitions. In 2016, the supported teams were: Aero Team, Cataratas Group of Energy Efficiency (GCEE), Baja Team and SAE Formula.

**Partners:** PTI Foundation, Itaipu and CEiiA.

“Itaipu and FPTI-BR have been developing initiatives with relevance to the sustainable mobility sector in Brazil. The partnership with CEiiA, within the framework of the electric vehicle sharing project, created a space of opportunity for the crossing and appreciation of competences already installed on both sides of the Atlantic. The opportunity lies now in integrating the energy sector with the transport one, which must be addressed in its technological dimension, regulation and creation of new markets. The Mobi-I laboratory is therefore a space for the creation and enhancement of knowledge in all areas relevant to the challenge of sustainable mobility, both in South America and in Europe”.

João Caetano
Director of Innovation of CEiiA
International Renewable Energy Center (CIBiogas)

CIBiogas is a scientific, technological and innovation institution which, in partnership with institutions such as the PTI Foundation, carries out projects related to renewable energies, emphasizing the promotion of sustainable development of the biogas chain.

The Center has 11 biogas production units, in small and medium-sized rural properties and in cooperatives in the west of Paraná and one unit under construction in Uruguay. CIBiogas lab, which analyzes the potential production of biogas using different organic materials as energy source is installed at PTI. In 2016, the space became the first biogas lab in Brazil certified by the National Institute of Metrology, Quality and Technology (INMETRO) in the ISO 17025 standard, meeting worldwide demanded criteria.

In 2016, important actions were executed by the CIBiogas/PTI Foundation partnership:

- **Entre Rios do Oeste**
  A project began to be executed in a partnership among the PTI Foundation, CIBiogas and Copel, which will connect 19 swine and poultry farms in the region of Entre Rios do Oeste, through a gas pipeline of approximately 22 kilometers. The animal waste of these spaces will be treated, transforming a polluting agent into biogas and biofertilizer, allowing the producers to negotiate these products and thus earn an additional income.

- **Biogas Production Unit**
  The deployment of the main equipment of an industrial complex, inside Itaipu, for the treatment of the biomass made of part of the sewer produced in the Power Plant, organic waste from the restaurants located inside Itaipu and remnants of grass pruning was concluded. The biogas generated will be refined and turned into biomethane, used as cooking gas and biofuel. In the first quarter of 2017 the commissioning of the equipment and instruments of the plant must be concluded and, after that, the experimental operation begins.

- **Biomethane Mobility**
  The biomethane, produced from animal and agricultural waste at the Haacke farm, is compressed in cylinders and transported to the filling station at Itaipu Binacional, where part of the power plant’s car fleet is fueled. In the end of 2016, it consisted of 59 biomethane-powered vehicles – an increase of 37% considering the previous year. Until August, 2016, the station operated at PTI.
  - 8,565 m³ of biomethane (approximate production per year)
  - 934 fuel supplies
  - 12 km/m³ was the average performance of the biomethane-powered vehicles

- **Eletrobras/CERON**
  Development of a remote monitoring system applied to the plants of micro-generation of distributed energy, in order to allow the collect and the storage of production data and the online monitoring of the units’ performance. The studies will be carried out at the mixed generation plant (biogas and photovoltaic energy), in Foz do Iguaçu, and at the photovoltaic generation plant in Porto Velho (RO). The project started in 2016, and the main results were: definition of the system’s requirements, elaboration of project of plant automation, determining of the installation areas, permission to interconnect the generation system with the electrical network, material and equipment bidding and participation in technical and scientific events.

- **Distance Learning**
  Courses about Territorial Management and Biogas Energies were offered – in Portuguese, English and Spanish – for 275 students from 25 countries.
Events
In May, PTI hosted the seminar Promoting the Use of Biogas and Biomethane in Brazil, in partnership with Itaipu, the Austrian Development Agency/ADA and Spirit Design. In November, a training about Basic and Technical Concepts for the Refining of Biogas was carried out at PTI, in partnership with Spirit Design, Boku University, Technical University of Vienna and Austrian Energy Agency.

Partners: PTI Foundation, Itaipu Binacional, Eletrobras-Cepel, Compaqás, CTGAS-ER, Fep, Faep, City Hall of Toledo, State Secretariat for Agriculture and Food Supply, Iapar, Onudi, FAO, Sebrae and Lar Cooperative.
Education and Extension

Higher Education
- State University of Western Paraná (Unioeste)
- Open University of Brazil (UAB)
- Federal University of Latin American Integration (Unila)
- Graduate Courses
- Interinstitutional Doctorates
- Specializations and Master’s Programs

Teacher Training
- Municipal Technology Center (NTM)
- Integrar Project

Popularization of Sciences
- Casimiro Montenegro Filho Astronomy Hub
- Science Station
- Fair of Science and Engineering Innovation (Ficiencias)

Non-formal education
- ViraVida
- Trilha Jovem
- Inclusive and professional workshops
- College Preparation Course
- Scanning Pilot Project
- Water: Knowledge for Management
- Work Group for Integration of the Health Actions in Itaipu’s Area of Influence (GT Itaipu-Health)
Education and Extension

Since its creation, PTI has dedicated itself to assertively contribute to the promotion of human development throughout the territory. Believing that education is a basic requirement to reach this goal, it has been investing in skill training and technical qualification, seeking to prepare citizens to deal with technological, economic and cultural changes and diversities, preparing them in the most varied capacities. In its role as a development agent, the park focuses on valuing the human being, opening its doors and establishing connections with various formal and non-formal educational initiatives that seek to contribute to the improvement of the quality of education in the territory and with the strengthening of public policies focused on education.

Higher Education

At PTI, three institutions of higher education are installed: the Center of Engineering and Exact Sciences (CECE) of the State University of Western Paraná (Unioeste); the Darcy Ribeiro University Pole from the Open University of Brazil (UAB); and some of the courses of the Federal University of Latin American Integration (Unila).
State University of Western Paraná (Unioeste)

Unioeste was one of the main boosters of the creation of PTI and the first institution of higher education to be installed in the Park, with its Center of Engineering and Exact Sciences (CECE), which has undergraduate courses in Computer Science, Electrical Engineering, Mechanical Engineering and Mathematics and with a Master’s Degree in Engineering of Dynamic and Energetic Systems. At PTI, the students have the opportunity to interact with Itaipu professionals and participate in research and development projects (R&D), promoted by the PTI Foundation and partners.

Itaipu and PTI support university extension projects, which involve about 60 students of electrical engineering, mechanical engineering and computer science. In these projects students have the opportunity to apply the knowledge acquired in the assembly of vehicle prototypes for participation in national and international academic competitions. The teams work on aeromodelling, energy efficiency, mechanical and electrical projects. The prototypes are assembled in the workshops installed in the Park.

“In the classroom we had the idea of putting together a team to compete in the Formula SAE. Unioeste’s teachers and PTI directors soon embraced the idea. For the development of the car we use the structure of the Park and we have the support of Mob-i professionals, who help to manage the project. Here we develop from the design to the prototype of the vehicle and carry out research to improve it. In addition to the basic subjects of mechanical and electrical engineering that we learn in the classroom, we need to apply various concepts of automotive engineering, so we seek bibliographies and technical help from outside professionals. The group is made up of students from different courses and periods, so it is necessary to know about people management, knowledge management, administration, project management and I believe that this experience will make a difference for our professional future”.

Caio Henrique Paim
Student of Mechanical Engineering of Unioeste, member of Cataratas Racing Team – FSAE
Open University of Brazil (UAB)

The UAB System is a program of the Ministry of Education (MEC) that seeks to expand and internalize the offer of undergraduate courses and lato sensu specializations, through distance education. In accordance with a public notice published in 2007, PTI, in partnership with the City Hall of Foz do Iguaçu, started to host one of the 291 classroom support centers of the UAB system, expanding higher public education in the region. **In 2016, UAB had 2 post-high-school, 3 undergraduate and 5 specialization courses offered by eight federal and state institutions.**

In 2016, UAB counted on courses offered by the following institutions: Federal University of Paraná, Federal University of Santa Catarina, Federal Institute of Santa Catarina, Federal Technological University of Paraná, Federal University of Santa Maria, State University of Maringá, State University of Center-West and Federal University of Itajubá-MG.

"Education is still the best way of social rise and UAB has provided an enormous gain to the residents of the region: a quality distance education system that makes possible the dream of graduating from important public universities in the country. In addition to having all the benefits of being in one of the most relevant technological centers in the world, PTI, UAB has a wonderful structure, all rooms have equipment that facilitates the teaching/learning process. And we still have all the books of PTI’s university library available for us”.

Rogério Back  
Resident of São Miguel do Iguaçu and student of the Languages Degree - Spanish, offered by UFSC, through Darcy Ribeiro  

<table>
<thead>
<tr>
<th>active vacancies</th>
<th>465</th>
</tr>
</thead>
<tbody>
<tr>
<td>students graduated from UAB in 2016, being 52 from undergraduate courses and 199 from post-graduation courses</td>
<td>251</td>
</tr>
<tr>
<td>graduated students since UAB was inaugurated in PTI</td>
<td>2,584</td>
</tr>
</tbody>
</table>
“It is a privilege to study in an institution that is based on Latin American integration, which allows cultural exchange and exchange of experiences among its students and the transmission of knowledge from its teachers. Temporarily allocated at PTI, which offers great infrastructure for the classes, all the academic activities take place in the best possible way and allow the good development of all the courses”.

Jhenifer Fermino
Student of Economic Sciences of Unila

Federal University of Latin American Integration (Unila)

Created in 2010, Unila’s institutional mission is to train human resources capable of contributing to Latin American integration, regional development, and cultural, scientific and educational exchange in Latin America and the Caribbean. Part of the university courses are installed in PTI. In 2016, PTI hosted 18 undergraduate courses and four stricto sensu (master’s) specialization courses from Unila.

In 2016, Unila had the approval of three new master’s courses (Civil Engineering, Neotropical Biodiversity and Biosciences) and the first doctorate, which will be offered in partnership with PUC-Rio, in the area of International Relations. Now, they are the stricto sensu graduate programs.

The university also underwent the institutional reaccreditation process of the Ministry of Education (MEC), obtaining final concept 4 - the equivalent of “very good” within the evaluative scale, ranging from 1 to 5. The university gathers professors from 15 countries, coming from Latin America, Europe, Asia and Africa.

Students enrolled in 2016 with 1,724 students in the PTI campus 3,013
Students graduated from Unila in 2016 260

Students from 17 countries: Brazil, Argentina, Uruguay, Paraguay, Chile, Bolivia, Peru, Ecuador, Colombia, Venezuela, El Salvador, Haiti, Costa Rica, Panama, Cuba, Dominican Republic and Guatemala.
Graduate Courses

Since 2011, PTI has brought to the western region of Paraná graduate courses that meet the specific demands of the locality. The masters and doctorate programs have the research as a base, generating knowledge, innovation and development. The courses are interdisciplinary, allowing the participation of professionals from related areas, making possible the entry of more interested parties and the formation of multidisciplinary research.

In partnership with public and private universities, the courses qualify researchers and generate expertise for research advances to address local needs. The courses also allow the integration between professionals and teachers, who share experiences, helping to identify local potentialities, structuring projects and new partnerships.

Interinstitutional Doctorates (Dinter)

In 2016, the first doctorate degrees offered by the PTI Foundation were granted. The Interinstitutional Doctorate in Law graduated 14 doctors and the Interinstitutional Doctorate in Numerical Methods and Engineering formed 22 doctors. Both were offered in partnership with the Federal University of Paraná (UFPR), the State University of Western Paraná (Unioeste) and Itaipu Binacional.

The 36 doctors are teachers from the west and southwest of Paraná. In addition to the qualification of the professors and the scientific development of the region, the doctorates generated unpublished research, with results compiled in the book “Numerical Methods Applied to the Analysis of Dam Safety” and “Reflections on the Philosophy of Law and the Philosophy of Liberation”. Besides that, more than 40 articles have been published in the area of engineering.

With the support of the PTI Foundation, other three doctoral programs will be installed in Foz do Iguaçu in 2017:

- Interinstitutional Doctorate in Electrical Engineering, in partnership with USP – São Carlos
- Interinstitutional Doctorate in International Relations, in partnership with Unila, Itaipu and PUC – Rio de Janeiro
- Interinstitutional Doctorate in Regional Development and Agribusiness, in partnership with Unioeste – Toledo.
Graduate Courses and Master’s Programs

In 2016, PTI also offered the following courses:

- Professional Master’s Degree in Technologies, Management and Sustainability, in partnership with Unioeste, with two groups started.
- Master’s in Computer Science, in partnership with UFPR, composed of 20 regular students.
- Graduate course in Numerical Methods, in partnership with UFPR.

“The offer of doctoral programs is an excellent opportunity for the formation of a critical mass capable of continuing research of interest to the region. The group was formed entirely by teachers from universities of the region, which meant a good possibility of local development, by accelerating professional training in various universities. Having a doctorate makes possible the participation in public notices of research projects, the increase in knowledge and experience with reflection in the classes that I teach. It allowed us to know a new area of research and showed that there are many possibilities for future research”.

Emerson Lazzarotto
Professor of the Engineering and Exact Sciences of Unioeste – Foz and student of the Doctorate in Numerical Methods and Engineering
TEACHER TRAINING

Municipal Technology Center (NTM)

The constant qualification of the teachers from primary school is the focus of the Municipal Technology Centers (NTM) all over Brazil. The NTM of Foz do Iguaçu is hosted in PTI and promotes training courses for the pedagogical use of information and communication technologies, providing continuous qualification to the teachers from several areas of knowledge, contributing to the improvement of the quality of teaching in the city’s basic education.

"The Center contributes to the training and updating of teachers, offering several course options. Presenting new methodologies and techniques to professionals is fundamental for the constant improvement of teaching. I used the structure of the NTM to conduct trainings with the team of laboratory teachers. The spaces of PTI are pleasant and the laboratories have all the equipment and the technologies necessary for an adequate training. Furthermore, the NTM team provides all necessary support for the activities related to technology”.

Wellington Severo da Silva
Technical coordinator of the computer labs of the municipal schools of Foz do Iguaçu

Integrar Project

The project makes available educational softwares and pedagogical and technological resources, encouraging the use of technological tools in educational activities, promoting the digital and social inclusion of students, teachers and the school community. Since 2012, the Municipal School Padre Luigi Salvucci, in Foz do Iguaçu, has been taking part in the project. The actions involve teachers and students from kindergarten to the 5th year of elementary school. In 2016, there were 1.516 hours of pedagogical monitoring to the teachers of the institution.

Partners: PTI Foundation, Ministry of Education (MEC) and Foz do Iguaçu City Hall.

5,006 trained teachers in 2016
19,353 trained teachers from 2010 to 2016

750 students attended in 2016
3.850 total students attended from 2012 to 2016

More than 16 thousand activities performed by the students using the software

33 teachers trained in 2016
196 teachers trained from 2012 to 2016

Partners: PTI Foundation, Itaipu and Foz do Iguaçu City Hall.
POPULARIZATION OF SCIENCES

Casimiro Montenegro Filho
Astronomy Hub

It is characterized as a science center with focus on Astronomy, whose activities aim at education, research and tourism. It has a planetarium, an observatory and external structures that allow the visitor’s interaction in teaching activities.

The Astronomy Hub is certified by the International Astronomical Union (IAU), being part of a global search network in astronomy. In 2016, it published eight scientific articles and obtained financial resources from CNPq for the purchase of a new telescope three times as big as the current one, which will be installed in 2017.

In the educational area, the Astronomy Hub works with teacher and students’ training in undergraduate level, promoting an improvement in the quality of teaching and contributing to the construction of a regional scientific culture, through scientific promotion activities.

The Hub is also part of the attractions of the Itaipu’s Tourist Complex, attending visitors from all over the world. In 2016, it received the TripAdvisor’s Certificate of Excellence, which awards tourism and hospitality establishments which offer high quality services, according to evaluations from travelers.

“The training at the Astronomy Hub gave me the opportunity to make an interdisciplinarity between the presented contents. The grade of the course has a very great harmony with the planning done by the Education Department of Foz. In the subject of Sciences, I was able to apply various contents. It was an unveiled world. I found teachers committed to making such a complex subject, which is the Universe, a nice thing to learn. I did almost every experiment with my students in class, and they were delighted. This year I intend to apply, in the classroom, all the experiments seen in the course”.

Sylvia Regina Rojas Azevedo D’Avila
Teacher of the Municipal Education Network of Foz do Iguaçu

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<thead>
<tr>
<th></th>
<th>in 2016</th>
<th>from 2009 to 2016</th>
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</thead>
<tbody>
<tr>
<td>certified teachers</td>
<td>189</td>
<td>1.435</td>
</tr>
<tr>
<td>attended students</td>
<td>9,301</td>
<td>72,476</td>
</tr>
<tr>
<td>tourists received</td>
<td>9,917</td>
<td>45,594</td>
</tr>
</tbody>
</table>

Partners: PTI Foundation, Itaipu, Finep, Unioeste, Unila, IFPR, CNPq and MCTI.
Science Station

The Science Station is a space to popularize, disseminate and strengthen the scientific culture through investigative practices for teaching sciences.

In its labs, students from primary school and high school take part in practical activities and the teachers get to know ways of teaching that awaken the interest for active and investigative methodologies. This way, the actions promote the change in the teaching and learning processes, encouraging scientific initiation from the base.

The space is also used by undergraduate students, who develop materials and didactic experiments for educators, through academic extension projects.

In 2016, the Science Station published the book, directed to educators, “Education beyond the school”, which approaches how the science teaching can be adapted to children and teenagers in a social vulnerability situation. The publication is a result of the Project “Citizenship and Humanization”, that has been carried out since 2010, with boys and girls from the Child of Value Institution from Foz do Iguaçu.

“An institution that provides you with the means to show your work, take what is being produced in schools to people from different places, is a great encouragement. The students leave here amazed, full of ideas, willing to replicate the actions”.

Regiane Cristina Castione
Teacher of the State Education Network in Foz do Iguaçu

10.821 attended teachers and students in 2016
142.225 people attended from 2006 to 2016
Innovation Fair of Sciences and Engineering (Ficiencias)

The fair encourages primary and high school students from Brazil, Paraguay and Argentina to use the scientific method of research to present innovative ideas. At Ficiencias, the youngsters have the possibility to discuss their projects with professionals and researchers from the scientific community. The 2016 edition gathered 4 thousand visitors. 836 projects were registered, from 1,244 students and 144 teachers. They represent 142 schools, from 98 Brazilian, Paraguayan and Argentinian cities.

Through Vivência Estudantil, the students awarded at Ficiencias get to know the research areas of PTI and Itaipu, enlarging perceptions about the role of scientific and technological development for the social and environmental welfare. In 2016, 140 students participated in the action.

**836 projects**

enrolled in 2016

**2,712 projects,**

from 2012 to 2016

**Partners:** PTI Foundation; Itaipu; PTI – Paraguay; Unioeste; Unila; State University of Central-West (Unicentro); State University of Maringá (UEM); State University of Londrina (UEL); State University of Ponta Grossa (UEPG); Federal Institute of Paraná (IFPR); Federal University of the Southern Border (UFFS); Federal Technological University of Paraná (UTFPR); National University of Misiones (UNAM); Secretariat of Education of Paraná; Foz do Iguaçu Regional Education Center; Secretariat of Education of Foz do Iguaçu; Association of Municipalities of the West of Paraná (Amop), through the Department of Education; Araucária Foundation and National Council for Scientific and Technological Development (CNPq).
NON-FORMAL EDUCATION

ViraVida

ViraVida works in training teenagers and youngsters in social vulnerability situation for social and professional insertion. PTI has been a partner of the program since 2014. The educational activities provide integral training, enabling the building of knowledge, the technical and professional training and the development of values, attitudes and personal qualities. Throughout the training, the teenagers have their first experiences in the world of work.

“The Park, besides offering wide spaces, structures and equipment, allows a broad vision of what may be the future for adolescents, in face of the effervescence of the life of the students from Unila, Unioeste and from the research areas of PTI. This environment stimulates curiosity and the quest for the development of skills enabling growth as individuals and future professionals”.

Ana Claudia Zimmer
ViraVida Pedagogue

95 youngsters enrolled in 2016
209 youngsters enrolled from 2014 to 2016

54 youngsters in productive activities, having formal income generation
66 youngsters inserted from 2015 to 2016

Partners: PTI Foundation and the Industry’s Social Service (Sesi)
Trilha Jovem

The project qualifies youngsters from 16 to 24 years old, preparing them for the job market in the tourism sector. The training has a one-year duration and uses a methodology that works with technical, professional, social and individual transformation. Also, it gives the youngsters the opportunity to take part in professional experiences. It is promoted by the Institute Polo Internacional Iguassu and the classes are held in PTI.

youngsters trained by the program:

<table>
<thead>
<tr>
<th></th>
<th>111</th>
<th>951</th>
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<tbody>
<tr>
<td>in 2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>from 2006 to 2016</td>
<td></td>
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youngsters who had professional experiences

76 in 2016

Promotion: Polo Internacional Iguassu Institute, with the support of the PTI Foundation and Itaipu.

“We should be responsible with our commitments and duties, teaching me to be punctual, proactive and to have respect for others. One of the team’s intentions is to prepare us for the work environment by teaching us how to work as a team and to respect the opinions of colleagues. During Trilha Jovem we carry out projects in which everyone gave proposals and we debated the ideas, where the opinions of all were heard, so we could achieve a project of excellence."

Lucas Miguel Cristofoli
Student formed by Trilha Jovem in 2016
Inclusive and professional workshops

Since 2015, PTI supports the structuring of the Association Um Chute para o Futuro (A Kick for the Future), which promotes the social, moral and personal development of children, teenagers and their families, through the insertion in activities and in pedagogical, leisure and professionalization environments. PTI offers handcraft workshops, storytelling, drawing and painting.

250 children and teenagers attended in 2016

263 hours of workshops in 2016

“Most children come with no hope for the future and we work to renew their dreams. PTI has helped us to transform their heads, showing that they can be great professionals. The PTI team treats students with a lot of love and dedication, motivating them. The work held in the workshops surprise children and their own parents, who gradually identify skills and seek new knowledge to transform realities”.

Ronaldo Cáceres
Um Chute para o Futuro Project Coordinator

Seeking to promote social productive inclusion and income generation, through Ñandeva it is also offered handcraft techniques workshops for youngsters and adults from Foz do Iguaçu.

21 workshops organized in 2016

367 participants in the workshops

“I’m a fisherman, but what you get from fishing is not always enough to support the house. I live with four grandchildren, all less than 10 years old. With what I learned here in the workshop, I can increase income a bit. It was the best thing that happened to me, I already have many orders”.

Lucinei Modesto dos Santos
Student of the Yarn and Fabric Workshop
The students and scholarship holders from PTI’s universities and centers are stimulated to share the knowledge developed in the PTI environment. In 2016, short-term technical courses were offered. Through this activity, they experience the introduction to teaching practice and can give back to the community the training opportunity they had. In 2016, students from Unioeste offered two groups of a Basic Course in Machining, that had 74 participants. Also, workers for the PTI Foundation offered a Solidwork Course, with 24 participants.

As scholarship holders or volunteers, the students can also follow and contribute to the research made by PTI’s Centers, preparing themselves for the job market.

“In the Park there is a vast possibility for us, students, to choose which project we will devote ourselves to. At the same time, this possibility implies the responsibility of being mature to set goals and achieve concrete results; whether good or bad. They will serve for personal and professional growth. In addition, there is the opportunity to devote to the research area; or to transform their innovations into marketable products through incubated companies. Thus, there is a catalytic environment for the training of professionals better able to deal with practical situations and not only theoretical”.

Giciele Solinger Ribeiro
Student of Mechanical Engineering in Unioeste and scholarship holder of the Batteries Project
University Admission Test Preparation Course

The college preparation course helps the students from public schools in Foz do Iguaçu enter higher education. The monitors who follow the groups are undergraduate students. This way, the course also opens the opportunity for initiation into teaching practice for students of different courses.

130 vacancies offered in 2016

33 volunteer monitors

14 scholarship monitors in 2016

Partners: PTI Foundation and Unioeste

490 from 2013 to 2016

“In an attempt to minimize the disparities between students from private and public schools, seeking to match the conditions of access to a fairer dispute, we propose the Pre-college preparation course. Because it is a course in which all the monitors are students, we believe that the university admission exam provides a space that better integrates this student to the project activities, offering a proximity environment where the teacher-student distance is minimized. In addition, the students begin to project themselves in actions linked to Unioeste. Many former students of the school make a point of repaying the aid by now working as monitors. Another benefit is found in the link, even if brief, that high school students create when participating in an activity provided by Unioeste, because they live in the university environment and take their experiences to their homes, disseminating actions, new expectations, new dreams”.

Dr. Kelly Roberta Mazzutti Lübeck
Coordinator of the Project and lecturer of the Mathematics Degree course from Unioeste - Foz do Iguaçu
Lawsuit scanning

It provides training and the inclusion of the hearing-impaired in the job market. The interns work in the scanning of lawsuits from the District of Foz do Iguaçu of the Court of Justice of Paraná, providing speed, economy and agility in the cases’ processing, in addition to safety and easy access to information.

The interns are accompanied by a translator and interpreter of the Brazilian Language of Signals (Libras), who also technically guides the activities. For most of the youngsters, this is their first professional experience and income generation.

In the partnership, the Court hired interns and made room for the scans. Apasfi made the selection and training of the participants; Itaipu made the financial contribution for the necessary acquisitions; and the PTI Foundation made the acquisitions, hired the interpreter and monitored the project. Per month, an average of 100,000 pages are scanned.

“...This is a very positive initiative for both the Judiciary and these kids. In terms of numbers it was quite productive. We had many digitalized lawsuits. They are bulky processes, which usually have more than 200 pages. Digital archives streamline paperwork and reduce paper traffic in the Forum. We realized that the kids are very happy, both for the opportunity, and for receiving their own income. This experience will be a differential for their future”.

Judge Marcos Frazon
Director of the State Forum of Justice of Foz do Iguaçu

7 interns trained and hired

4,036 scanned lawsuits

Partners: PTI Foundation, Itaipu, Court of Justice of Paraná and the Association of Parents and Friends of the Deaf of Foz do Iguaçu (Apasfi).
Water: Knowledge for Management

It has the purpose of raising awareness for the adoption of responsible attitudes in water use; promoting knowledge symmetry to the technicians; and stimulating the involvement of all society in the participatory management of the water resources, guaranteeing quality and quantity to meet their multiple uses.

There were 30 courses available, in Portuguese and Spanish, offered in the Distance Learning and Blended methodologies. Among the trained professionals, there are people from all the Brazilian States and from all Latin American countries, in addition to participants from Spain, Germany, Portugal, Cape Verde and Mozambique.

7,893 trained professionals in 2016

27,281 from 2012 to 2016


“I have been in the area for 11 years and the most striking accident of my trajectory and of IBAMA was the Samarco disaster. Having taken the course of Dam Safety was very important, because I managed to technically dialogue with those responsible, I was able to understand several documents that were passed on. Today I know what a dam instrumentation is, I can see a graph and understand what it means. I just have to thank ANA, FPTI and Itaipu”.

Fernanda Pirillo
Environmental Analyst of Ibama, General Coordinator of Environmental Emergencies of Brasilia (DF).
Work Group for Integration of the Health Actions in Itaipu’s Area of Influence (GT-Saúde)

The group contributes to the strengthening of public policies in the triple border region, promoting actions based on the integration and on the cooperation among the neighbor countries. In a democratic space, it gathers management and health service professionals from Brazil, Paraguay and Argentina who monthly elaborate projects and proposals that benefit the region’s population. Approximately 120 people voluntarily take part in the technical commissions of worker health and environment, indigenous health, mental health, maternal, child and teenager health, elderly health, man health, accidents and violence, endemics and epidemics and permanent education in health.

In 2016, in cooperation with partner institutions, it developed the project of the Center for Tropical Medicine of the Triple Border. The Center allows epidemiological surveillance and the early detection of the risk of transmission of emerging and reemerging diseases in the Triple Border region.

2,572 trained professionals in 2016
14,200 trained professionals from 2005 to 2016
16,748 participants in community events organized by the Work Group, from 2005 to 2016.

**Partners:** PTI Foundation, Itaipu, Itaiguapy Health Foundation, universities, Health Ministries, government and non-governmental organizations, United Nations Population Fund, among others.

“GT-Saúde, when created, seemed more like a forum for theoretical discussions. Today, however, I see a much more dynamic and practical, well coordinated group that has become a point of convergence of ideas that often become projects of common interest to the health of the population of the three participating countries”.

Ademir Ferreira de Souza
Director of the 9th Regional Health Center and member of GT-Saúde
Innovation and Business

- Santos Dumont Incubator and Business Condominium
- Itaipu’s Tourist Complex (CTI)
- Sustainable Economic and Social Development Program of the Western Region of Paraná
- Regional Training Program for Local Economic Development with Social Inclusion (Conectadel)
- West Developing Program
Innovation and Business

Contributing to the strengthening of the productive systems of the territory is one of the strategic objectives of the PTI Foundation. Therefore, it acts in the generation of knowledge, in the incentive to the entrepreneurship and in the promotion of solutions for the development of businesses.

“Santos Dumont Incubator was one of the winners of an ICE challenge, after a six-month work, with incubators and accelerators to prepare them and help them devise a concrete action plan to encourage the emergence of impact businesses in their regions. PTI plays a very strategic role in the region of Foz do Iguaçu, and an agenda such as impact business needs to be stimulated by an organization that has this vision of what is innovative. In addition, the incubator, for being very connected to potential entrepreneurs and mature entrepreneurs, can scale for the appearance of solutions that will solve social or environmental problems”.

Fernanda Bombardi
Executive Manager of the Institute of Corporate Citizenship (ICE)

SANTOS DUMONT INCUBATOR AND BUSINESS CONDOMINIUM

The PTI Foundation encourages the creation of new businesses, increasing employment and income opportunities. The actions of Santos Dumont Incubator and of the Business Condominium seek to disseminate the entrepreneurial culture, contributing to the economic development of the region.

In 2016, 48 entrepreneurial initiatives were supported, of which 5 were condominium companies, 9 were incubated and 35 were pre-incubated. Together, these ventures generated 121 jobs, with an average salary of R$ 2,663.00. In addition, in 2016 the companies’ turnover was R$ 4,931,040.00.

The Incubator is in the process of implementing the Cerne methodology (Reference Center for Support to New Ventures) proposed by Sebrae and Anprotec. As a result, in 2016 the average turnover of incubated companies increased by 28.9% compared to 2015.

In the pre-incubation public notice, 57 business proposals were registered, an index 56% higher than 2015, a result of the Incubator’s actions, especially related to the 43 training sessions on entrepreneurship and innovation, which reached 1,809 people.

In 2016, the first branch of the Incubator was structured, in Marechal Cândido Rondon, expanding and strengthening the program’s performance. A public notice for proposals for pre-incubation was published, and registered 17 participations. In addition, the Prototyping Laboratory was structured, having 11 pieces of equipment to be used by companies in the execution of prototypes of their products and services, streamlining and cheapening the research and development processes.
It was among the 5 national incubators awarded in the Incubation and Impact Acceleration Program (promoted by ICE, Anprotec and Sebrae), which, in addition to financial resources, allowed the incubator’s network to be expanded. Also, it was among the 13 incubators selected for the Creative Economy Promotion Program (promoted by Samsung, Anprotec and the Korean Center of Creative Economy and Innovation), which supports the development and acceleration of technology-based enterprises using resources from the computing law.

In partnership with the incubated company Mobhis, a system of bicycle sharing was implemented in PTI. With seven bicycles and three sharing stations, the system provides a sustainable alternative for short-distance routes, as well as it promotes quality of life for the inhabitants of the Park.

34 projects participated in the pre-incubation in 2016

151 projects participated from 2006 to 2016

48 entrepreneurial initiatives supported in 2016

288 initiatives from 2006 to 2016

Since 2006, 5,359 people have been trained; 180 projects were taken for incubation; 140 were incubated and 45 became condominium members, which generated 1,062 jobs and revenues of R$ 39,46 million.

Partners: PTI Foundation, National Association of Entities Promoting Innovative Enterprises (Anprotec), Samsung, Brazilian Service of Support to Micro and Small Enterprises (Sebrae), National Council of Scientific and Technological Development (CNPq), Institute of Corporate Citizenship (ICE), City Hall of Marechal Cândido Rondon and Parana’s Network of Incubators and Accelerators of Innovative Enterprises (Reinova-PR).
Itaipu’s Tourist Complex (CTI)

The PTI Foundation is responsible for the management and operation of the Itaipu’s Tourist Complex (CTI). Since 2007, it has been implementing, with quality and innovation, improvements to the tourist attractions and services of CTI, contributing to the increase of flow and permanence of visitors in the several attractions offered by Itaipu.

In 2016, an audioguide was implemented in the Panoramic Visit, bringing more entertainment to the tour, enhancing the quality of technical information and curiosities about Itaipu and its actions. Add to this action the fact that the purchase of tickets for the attractions, now, can be done through mobile devices, optimizing the visitor’s time.

Attractions: Panoramic Visit, Special Circuit, Kattamaram, Biological Sanctuary, Lighting of the Dam, Eco-Museum, Astronomy Hub

Besides investing in the quality of the services offered to visitors, the financial results of the operation are destined to the Technological Fund and applied in education, science, technology, innovation, culture and entrepreneurship projects of the PTI Foundation.

In 2016, the World Tourism Organization awarded the PTI Foundation in the Innovation in Research and Technology category, for the model of sustainable non-profit operation, concerned with the regional development.

PTI also received the Traveler’s Choice and the Certificate of Excellence from TripAdvisor, which awards the institutions of the tourism sector and hotel management that offer high-quality services, according to the visitor’s evaluation. It was also certified with the ISO:9001 seal.

Partners: PTI Foundation, Itaipu and Tourist Trade of Foz do Iguaçu.

“Over time, Itaipu’s tourism infrastructure has consolidated itself in terms of attractiveness. Today, Itaipu and the Iguassu Falls form a tourist duct that makes Foz do Iguaçu have a very strong status in the market. PTI, through the Tourism Complex, is one of the main contributors to the Iguaçu Fund, which works to promote local attractions, allowing strategic actions to be taken in favor of tourism growth in Foz. Still, supporting the integrated management of tourism in the region, Itaipu is also responsible for strengthening the sector, leveraging demand growth year after year, generating employment and income for the city”.

Felipe González
President of Comtur - Municipal Council of Tourism of Foz do Iguaçu
Vice President of ABAV-PR - Brazilian Association of Travel Agents

Jobs generated in 2016:

140 direct jobs 150 indirect jobs
Sustainable Economic and Social Development of The Western Region of Paraná

The partnership with BNDES and Itaipu aims at contributing to the reduction of inequalities, social inclusion and the territorial development of the region of the Association of Municipalities of the West of Paraná (Amop), through actions to strengthen low income productive communities, to support environmental sustainability and to improve the cities’ public management. It has two running axes: Social and Productive Inclusion and Environmental Sanitation. Other two axes, Foz do Iguaçu City Market and Strengthening Public Management, had their plans finished and approved. The execution of such axes must begin in the first semester of 2017.

Social and Productive Inclusion Axis

Investing in social and productive inclusion is contributing to the sustainable overcoming of poverty, a big challenge and national commitment. The Axis supports the structuring and management of productive collective enterprises, made of low income people, from the urban or rural areas.

- It’s strengthened the management and structure of the Coofamel Cooperative’s honey processing unit in Santa Helena, with an approximate investment of R$ 1 million, benefiting the 129 cooperative members and their families.
- Two trucks with refrigerated chests were delivered and the Aprosmi Association’s Producer Market started being built in São Miguel do Iguaçu, with a planned investment of R$ 3.4 million, benefiting 240 members and their families.
- Awareness-raising and training activities were carried out for productive groups in the territory, such as the workshop “Cooperation as a Development Tool” and courses with subjects ranging from accounting concepts to social organization and planning, through marketing and people.

Environmental Sanitation Axis

Investing in sanitation is contributing to the National Plan of Basic Sanitation, which foresees the universalization of water and sewer services for all the south region up to the decade of 2030. Also, according to the World Health Organization (WHO), every dollar invested in sanitation saves 4,3 dollars in health.

“The project of social and productive inclusion provided, for the cooperative, equipment that came to assist in the aggregation of value to products. As a consequence, it benefits the producer because we can pay a better price, which will improve the income on the properties and the quality of life of the farmers. We also received a truck, which assists in logistics and improves the collection, distribution and marketing of products. Still, we have received resources to form a regulatory stock, which keeps the cooperative always well structured in the market.”

Wagner Gazziero
President of Coofamel Cooperative

- The support to the elaboration of basic sanitation plans was consolidated in the cities of Entre Rios do Oeste, Pato Bragado and Quatro Pontes, which resulted in respective City Policies of Basic Sanitation, approved by the City Council Chambers. The partnerships added up to R$203.000,00, benefiting the more than 13 thousand inhabitants of the three cities.
- The execution of the support for the preparation of the Intermunicipal Solid Waste Management Plan of the seven cities that integrate the City Consortium Cidersop began. The partnership with the Consortium adds up to R$300.000,00 and benefits 52,5 thousand people who live in the cities of the consortium.
- Agreements were celebrated with the cities of Santa Helena, São Pedro do Iguaçu and Santa Terezinha de Itaipu in order the support the review of their city plans. These partnerships add up to R$343.00,00, benefiting the 54,6 thousand inhabitants of these cities.

Partners: PTI Foundation, Itaipu, National Bank for Economic and Social Development (BNDES), Association of Municipalities of the West of Paraná (Amop), Micro and Small Business Support Service of the State of Paraná (Sebrae-PR), Intermunicipal Consortium for the Sustainable Rural Development of the Western Region of the State of Paraná (Cidersop), Solidarity Cooperative of Beekeepers of the West Coast of Paraná (Coofamel), Organic Producers Association of São Miguel do Iguaçu (Aprosmi) and City Halls of Entre Rios do Oeste, Pato Bragado, Quatro Pontes, São Pedro do Iguaçu, Santa Terezinha de Itaipu and Santa Helena.
Regional Training Program For Local Economic Development with Social Inclusion (ConectaDEL)

The program acts in the training and generation of capabilities in development, providing mechanisms for the local players to develop and execute cooperative projects. Between 2015 and 2016, six projects were executed in the region with non-refundable financial resources from the Inter-American Development Bank (BID), through the Multilateral Investment Fund (FOMIN) and with counterpart of the participant institutions.

The projects had 06 months of execution and involved 18 institutions in their implementation. The main results reached by the project were:

- Organization of the productive sectors of milk, poultry and swine in the cities of Matelândia, Medianeira, Céu Azul, Vera Cruz do Oeste and Serrandópolis do Iguacu in Sectorial Nuclei. A strategic plan was performed for each sectorial nucleus, with short, medium and long-term actions. In total, 70 producers entered the project.

- Professional training of technicians from commercial and businesses associations of the west region, for fundraising. The initiative involved 14 associations and 24 technicians finished the course.

- Development of the fish production chain in the city of Itaipulândia – case study in a fishermen colony of the city. 50 fishermen were trained in Hazard Analysis and Critical Control Points (APPCC) and in good fish handling practices.

- Incentive to Fresh water shrimp production in the region, training 46 producers in order to better use the water blades encouraging polyculture and practical training with visits to breeding sites. In total, 10 producers adhered to shrimp farming.

- Creation of the Municipal Business Development Agency in Ubiratã, with elaboration of a business model for 10 companies installed in the region.

- Launching of the System for Monitoring and Follow-up of the Integrated Regional Development Plan (PDRI) and the training of managers and users on the system operation.

“...The professionalization of territorial development, through the training of local agents, decisively contributes to the identification of strategic opportunities and partnerships and, above all, effective action for effective results for the development of communities. Project-driven training challenges us to deliver efficient, fast and permanent results. The project had regional visibility and UFPR can also expand this research as an economically viable activity to the rural producers. The execution of the project, in a heterogeneous group and with the tutoring of people with high technical knowledge, allowed a very rich experience in knowledge and the permanent desire to take on new challenges to promote the development of our municipality”.

Lara Beatrice Biezus
Municipal Secretary of Industry, Commerce and Tourism of Palotina and Coordinator of the Municipal Management Committee. She participated in the project “Production of freshwater shrimp in the western region of Paraná”

Partners: PTI Foundation, Itaipu, BID, FOMIN, Arnop Caciopar, Sebrae, Unioeste, Fiep, West Developing Program, City Hall of Palotina, City Hall of Itaipulândia, City Hall of Ubiratã, Aquaculture Association of Palotina (Apaqui), Commercial and Industrial Association of Cascavel (Acic), Sicoob, Commercial and Industrial Association of Ubiratã (Aceu), SDC Coaching, Commercial and Industrial Association of Matelândia (Açma), Federation of Business and Business Associations of the State of Paraná (Faciap), Milk Producers Association of Matelândia (Aplermat), Foundation for Support to Education, Research and Scientific and Technological Development of the Federal Technological University of Paraná (Funtef – PR), UTFPR, Federal University of Paraná (UFPR), Fish Farmers Association of Porto Barreiro and the Regional Development Agency of Southwest of Paraná.
West Developing Program

Launched in 2014, the (POD) is a territorial governance that seeks to promote the sustainable development of the western region of Paraná — region that covers 54 municipalities — through the synergy of the institutions and the integration of initiatives, projects and actions. The POD establishes strategies for the development of the region, in an organized and participatory way. Its focus of acting is on the incentive and proposition of actions capable of increasing the competitiveness in the territory.

Through the Program, technical studies are carried out for the productive chain of fish, milk, chicken, swine and grains, and of the structuring axes of infrastructure and logistics; energies, environment and regional innovation system.

Since its launching, 63 institutions have formally adhered to the POD and more than 500 mobilizations were performed in the meetings of the technical chambers and work groups. The intervention of the productive chains and structuring axes generated the mobilization and the engagement of the public institutions and of the productive sector, which, in 2016, resulted in the main actions:

• Meeting of Agricultural and Livestock Health, involving 150 participants, which resulted in a work plan for conquering the status of “Free from foot-and-mouth disease without vaccination”.

• Census of the Agricultural Departments of the Western Region, in which was gathered information about the structure, politics and actions of the departments; and identified possibilities of joint actions.

• Society mobilization against the renewal without bidding for toll concessions in Paraná.

• Articulation for the enlargement of the credit line of the National Program to Strengthen Family Agriculture (Pronaf) for fish farming, which increased from R$100,000,00 to R$250,000,00 for defrayal, and from R$150,000,00 to R$330,000,00 for investment. With greater credit, the producers will be able to expand and improve their structures.

• Holding of the Seminar of the Territorial Observatory, involving 23 participants, which presented theoretical and methodological perspectives along with analysis of relevant information to compose the structure of the Territorial Observatory of POD.

• Elaboration of the 2nd edition of the West Regional Conjuncture Bulletin, in which were analyzed data regarding the number of formal jobs and companies, distributed by economic sectors, in the cities that compose the west region, in the period between the years 2005 and 2015.
Innovation and Business
2016 Results Report

Partners*: PTI Foundation, Itaipu, International Center for Renewable Energies – Biogas (Cibiogás - ER), Association of Municipalities of the West of Paraná (Amop), Bioplan Biogas, Master Solar Energy, Technology Institute of Paraná (Tecpar), Leão Energia Industry of Generators, Institute of Technological Development and Research of Paraná (Idetep), Federal University of Paraná (UFPR – Palotina), Federal Technological University of Paraná (UTFPR), UTFPR Campus Santa Helena, UTFPR Campus Medianeira, Pontifical Catholic University of Paraná (PUC – Toledo), Business and Commercial Association of Toledo (Acit), Technological Center of Assis Gurgacz College (TECFAG), State University of Western Paraná (Unioeste) campus Rondon and campus Toledo, City of Toledo, Agricultural Defense Agency of Paraná (Adapar), Regional Center of Rural Trade Unions of Paraná, Aquaculture Tupi, C. Vale Agroindustrial Cooperative, Agroindustrial Cooperative Copagril, Coopavel Agroindustrial Cooperative, Lar Agroindustrial Cooperative, Institute of Technical Assistance and Rural Extension of Paraná (Emater), Federation of Agriculture of the State of Paraná (FAEP), Agronomic Institute of Paraná (Iapar), Aplemat, Via Lácteos Transports, Pisces Fish Farming Agroindustrial Cooperative (Copisces), State Secretariat for Agriculture and Food Supply / SEAB, City Hall of Ubiratã, City Hall of Quedas do Iguaçu, Frimesa Central Cooperative, Copacol – Consolata Agroindustrial Cooperative, Primato Agroindustrial Cooperative, Sardella Slaughterhouse, Apacui, Palotina Dairy Products, International Union of the Americas (Uniamerica), Aendet Cataratas e Caminhos, Iguacu International Pole Institute, Association of Chambers and Councilors of Western Paraná (Acamop), Development Council of Municipalities Surrounding the Itaipu Lake, Cacopar, Department of Agriculture of Jesuits, City Hall of Tupãssi, Association of Agriculture and Environment Management of Palotina, LactoBom – Industry and Commerce of Milk Products Bombardelli, City of Céu Azul, State Secretariat of Agriculture and Supply – Regional Nucleus of Toledo, Friella – Slaughterhouse São Miguel, Globoaves Group, BRF Brasil Foods – Toledo, JCI Assis Chateaubriand, JCI Cascavel, Brazilian Agricultural Research Corporation (Embrapa), Environmental Institute of Paraná (IAP), Fundec, Brazilian Service of Support to Micro and Small Companies (Sebrae).

*Institutions that signed the term of adhesion of the West Developing Program

Legal forwarding that resulted in the publication of the Ordinance No. 216, of the Ministry of Agriculture, Livestock and Supply (MAPA), about the destination of dead animals and that institutes a Work Group to discuss and present proposals to regulate the collect, processing and destination of dead animals in the rural area.

Structuring of the 2nd edition of the “Basic manual for the production of tilapia in excavated tanks”, aimed at producers and technicians who provide technical assistance in the region.

Holding of two editions of the Economic Development Forum of the Western Territory of Paraná, involving 567 participants.

“The POD gathered forces from the west around common causes, awakened the sense of belonging and responsibility towards the region. Identification, prioritization and objective actions gave credibility to decision-making bodies in the public and private spheres. POD has already become a catalyst for regional development”

Elias José Zydek
CEO of Frimesa
Balance Sheet

The ITAIPU TECHNOLOGICAL PARK FOUNDATION - BR, established by Itaipu Binacional, is a non-profit private legal entity, exercising its activities with legal, administrative and financial autonomy.

The financial statements and their explanatory notes have been made in accordance with the accounting practices adopted in Brazil, based on the SME Technical Pronouncement - Accounting for Small and Medium Enterprises (NBC TG 1000), approved by CFC Resolution No.1.255/09, as well as the CFC Resolution No. 1409/12 for Non-Profit Entities, which establishes specific criteria and procedures for the evaluation, recording of components and changes in equity and structuring of the financial statements, and the minimum information to be disclosed in an explanatory note of the financial statements of entities with non-profit purposes.

The main accounting practices adopted by the Itaipu Technological Park Foundation-BR are:

a) Determination of Income
Revenues and expenses are accounted based on a competence regime. Subsidies are appropriated to revenue in proportion to their realization.

b) Cash and Cash Equivalents
They comprise cash balances, bank account movement and financial investments of immediate liquidity. The amounts are segregated by the institution’s free-of-use resources and resources with restriction, linked to the agreements and/or running projects at the Itaipu Technological Park Foundation-BR.

c) Asset and Liability Transactions
Assets and liabilities expected to be realized within the next 12 months are classified as current items and those with maturity or expected realization over 12 months are classified as non-current items and are recorded at the principal amount, adjusted when applicable, for income, monetary variations, incurred charges and provisions for losses, adopting the pro rata criteria for appropriation.

d) Fixed Assets
Fixed assets are stated at acquisition or construction cost, adjusted for accumulated depreciation charges, calculated by the straight-line method, based on annual rates that consider the lifespan of the assets: 10% for furniture and fixtures, 10% to 20% for machinery and equipment, 20% for vehicles and data processing equipment and 5% for real estate in buildings and improvements. Building reforms and work in progress are accounted as improvements in third-party properties due to the loan agreement signed between the Itaipu Technological Park Foundation-BR and Itaipu Binacional.

e) Intangible
The intangible assets correspond to the assets and intangible rights assigned to the maintenance of the Itaipu Technological Park Foundation-BR. Expenses associated with identifiable and unique software, controlled by the Itaipu Technological Park Foundation-BR and that are likely to generate economic benefits greater than costs, are recognized as intangible assets. Expenses associated with the development and maintenance of software are recognized as expenses to the extent they are incurred.

f) Vacation Provisions and 13th Salary
They are constituted based on the rights acquired up to the date of the Statements, plus incurred social charges, up to the end of the period.

g) Programs and Agreements
The result of the programs and projects under the responsibility of the Itaipu Technological Park Foundation-BR is determined based on the competence regime, and the revenues are recognized by the appropriation of the advance payments received and the expenses based on documentation proving the expenses incurred in the period.

h) Net Assets
The Itaipu Technological Park Foundation-BR does not distribute any part of its assets or income under any title, applying its resources integrally in the country’s social development and institutional objectives.
The complete Financial Statements can be consulted in full at the electronic address: [http://www.pti.org.br/transparencia](http://www.pti.org.br/transparencia)

* The data presented are subject to change, conditioned to the approval of the boards of the PTI Foundation, scheduled for April 26th, 2017.