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SUSTAINABLE CITIES AND COMMUNITIES

ITAIPU BINACIONAL

UNDESA – Itaipu Binacional SUSTAINABLE WATER & ENERGY PARTNERSHIP

MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

CASE STUDY: ITAIPU AND SDG 11

Activities by ITAIPU Binacional supporting implementation of the Sustainable Development Goal 11 (SDG 11) of the United Nations 2030 Agenda for Sustainable Development

Autor: Itaipu Binacional

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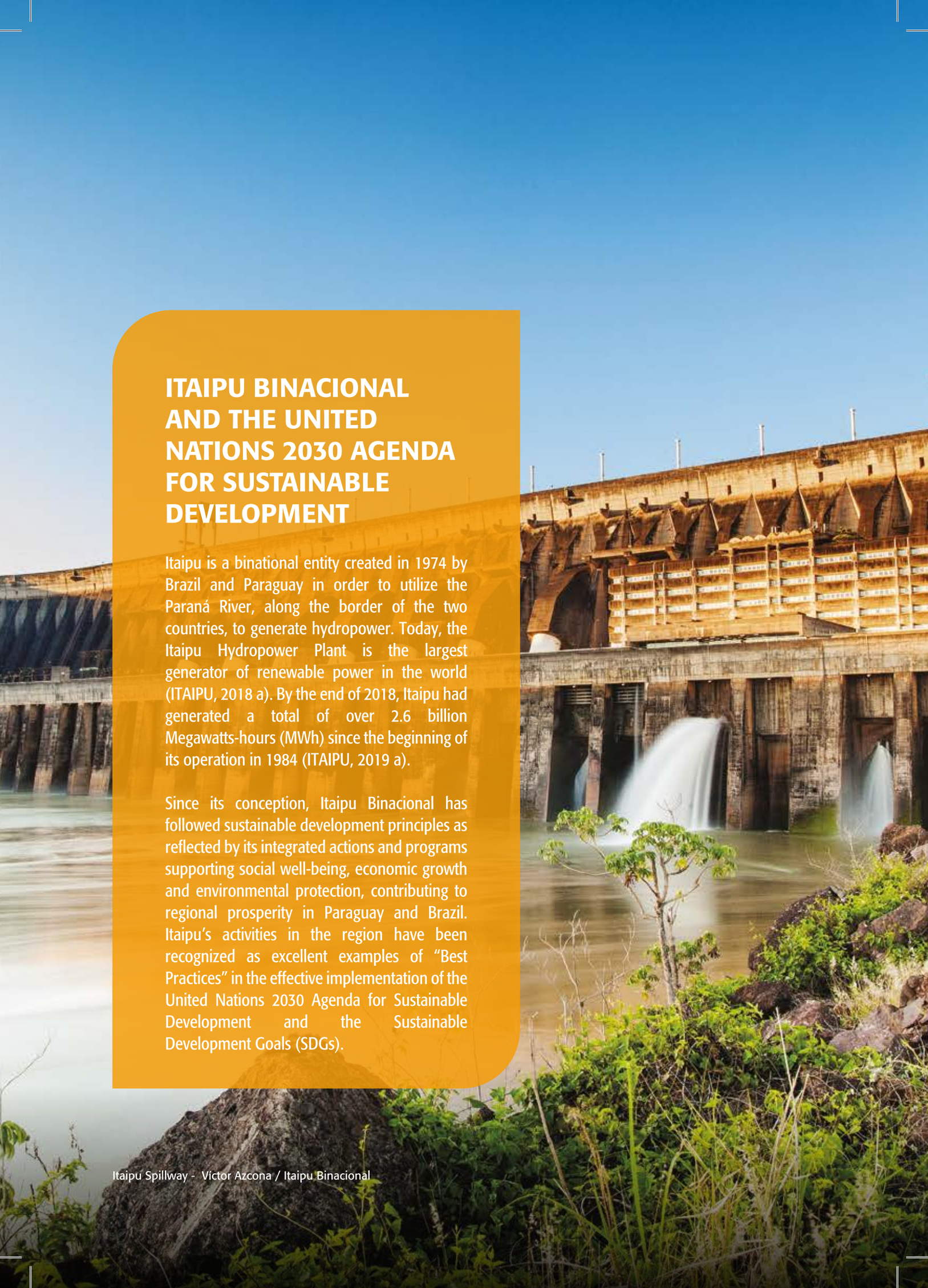
Itaipu is a binational entity created in 1974 by Brazil and Paraguay in order to utilize the Paraná River, along the border of the two countries, to generate hydropower. Today, the Itaipu Hydropower Plant is the largest generator of renewable power in the world (ITAIPU, 2018 a). By the end of 2018, Itaipu had generated a total of over 2.6 billion Megawatts-hours (MWh) since the beginning of its operation in 1984 (ITAIPU, 2019 a).

Since its conception, Itaipu Binacional has followed sustainable development principles as reflected by its integrated actions and programs supporting social well-being, economic growth and environmental protection, contributing to regional prosperity in Paraguay and Brazil. Itaipu's activities in the region have been recognized as excellent examples of "Best Practices" in the effective implementation of the United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs).



Itaipu Spillway - Víctor Azcona / Itaipu Binacional

SDG 11: MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

Target 11.1: By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

Target 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

Target 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

Target 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage

Target 11.5: By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations

Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

Target 11.7: By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

Target 11.a: Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

Target 11.b: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels

Target 11.c: Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials

Source: United Nations.

Autor: Itaipu Binacional

About 101,000 hectares of forests surround the Reservoir, enhancing resilience to climate change. This area represents the protected buffer zone for the Reservoir along both the Brazilian and Paraguayan margins. It includes a total of 10 biological sanctuaries and reserves (ITAIPU, 2018 b) that protect native biodiversity of the region and advance research and conservation initiatives. These areas and the Reservoir provide valuable connections among important remnants of the Upper Paraná Atlantic Forest, located in Paraguay, Brazil and Argentina.

The effective integrated management, protection and conservation of all water and terrestrial ecosystems located in the area are key activities supporting ecosystem services, sustainability and prosperity for the region, which encompasses the Itaipu Reservoir and its surroundings.

Itaipu plays a very important role in the mitigation and adaptation of climate change effects resulting from greenhouse gas (GHG) emissions. As the largest generator of renewable power in the world, Itaipu contributes to the global efforts on combating climate change and its impacts, which is the definition of the Sustainable Development Goal on Climate Change (SDG13) of the United Nations 2030 Agenda for Sustainable Development. Its reliable and efficient generation of clean electricity for over three decades has resulted in the avoidance of the use of massive quantities of fossil fuels and, consequently, has averted the emissions of millions of tons of GHG to the atmosphere annually.

The electricity generation from the Itaipu Hydropower Plant replaces the equivalent of 550,000 barrels of oil or 50 million cubic meters of natural gas each day. In relation to the impacts of climate change, Itaipu is avoiding the emissions of about 87 million tons of CO_2 each day equivalent, if it is replacing coal, and 39 million tons if it is replacing natural gas (ITAIPU, 2018 a).

The fixation of CO_2 in the biomass of Itaipu's Protected buffer zone and reserves is approximately 30 times higher than its emissions, related to the three scopes of the GHG Protocol (ITAIPU Binacional, 2018 a), which are disclosed annually in the company's sustainability reports.

Despite all these favorable numbers, Itaipu has been strongly committed to reducing CO_2 emissions, with clear targets in its strategic plan, considering reductions on internal consumption of electric energy and fossil fuels in the entity's vehicles, and distances traveled by employees and visitors on flights contracted in airplanes.

Itaipu is also committed to climate change adaptation efforts by implementing ecosystem based adaptation measures, such as the increase natural forest cover, rewilding protected areas with key native species such as pollinators, seed dispersers and predators, and by recovering and protecting water resources at watershed basin scale.

The spillway - Alexandre Marchetti/Itaipu Binacional

SUSTAINABLE DEVELOPMENT STRATEGY OF ITAIPU

Itaipu's vision for 2020 is to be "the generator of clean, renewable energy with the best operating performance and the world's best sustainability practices, promoting sustainable development and regional integration"(ITAIPU, 2018 b).

For Itaipu, social responsibility is a major commitment, intrinsically linked to its management system, constituting one of its most important missions in its different lines of action. Itaipu follows policies and practices that promote prosperity and contribute to improving the well-being of the population in many communities, in both Paraguay and Brazil. The organization represents a powerful force in the advancement of sustainable regional development, helping to build more peaceful, inclusive, equitable and solidary societies. In Brazil, these actions have taken place mainly in the area of influence of the Reservoir and extend to many municipalities in the western region of the state of Paraná. In Paraguay, many of the actions have national coverage and benefit different regions of the country.

Within the social dimension of sustainable development, activities by Itaipu are designed to help to reduce poverty, increase food security and enhance nutrition, improve health, foster better education and promote equality with respect to gender, age, disabilities, race, religion, ethnicity and economic status. They also promote income generation, protection of children and adolescents, respect for human rights, justice for all, accountable institutions, conservation of biodiversity, and sustainable means of production and consumption. These activities are part of the Itaipu's Business Plan, which includes the corresponding programs and actions fully linked to strategic objectives and organizational policies and guidelines (ITAIPU, 2018 c).

Itaipu and the SDG 11

Itaipu strongly supports the objectives of SDG 11, which call for making cities and human settlements inclusive, safe, resilient and sustainable. The Entity is conducting many initiatives that are helping ensure safe and affordable housing, transportation, and sustainable communities, while also preserving crucial cultural and natural heritage for the people who live in the region. Some of the most important activities by Itaipu related to SDG 11 include: provision of affordable housing to those who live in vulnerable situations; implementation of the Dam Safety Program; support for the establishment of a Sustainable Cities Program Network; support for museum management and institutions that preserve cultural and natural heritage; support for green infrastructure; implementation of the Biosphere Reserve initiative; revitalization of public areas; and the West 2030 Sustainable Development Cooperation project.

1.

PROVISION OF AFFORDABLE HOUSING TO FAMILIES IN VULNERABLE SITUATIONS

Autor: Itaipu Binacional

Objective and description

Itaipu Binacional has provided financial and technical support for the provision of affordable housing to families living in vulnerable situations, in both Brazil and Paraguay. The programs in each country have been administered based on local criteria.

On the Brazilian margin, the Need-Based Family Housing Initiative has sought to build 20 town dwellings in the state of Paraná, in the municipality of Quedas do Iguaçu. The selecting criteria were developed via rankings by the State Department of Family and Social Development of Parana (SEDS), based on the family vulnerability index (IVF/PR) and the housing deficit of the municipalities. It has been implemented through the formalization of agreements between Itaipu and the selected municipalities, within the provisions of Itaipu General Procurement Standard.

In addition to the land donated for the purpose of building housing facilities and the conduction of the bidding process for executing the work, the municipality selects the beneficiaries who will receive the housing by means of donation or grant. The beneficiaries correspond to the responsible members of each family unit living in the vulnerable situation and/or confronting a social risk. The criteria and norms for the selection of the beneficiaries are defined by the municipality, respecting principles related to important issues such as legality, morality, probity, reasonableness, proportionality, and administrative efficiency.

Itaipu has established that the location of the housing should be close to public services such as day-care centers and health centers, guaranteeing the residents' access to basic services. It also provides the houses based on their vulnerability index, ensuring those who need housing the most can receive safe and affordable housing. At the moment that Itaipu defines the target population of the housing, their right to the property is guaranteed. In addition, the housing units to be donated or granted are built of material of adequate resistance to the climactic events of the region, conditions that probably the beneficiaries' current dwellings do not have, leaving them vulnerable to the climate or extreme weather events. This ensures the housing to be adequate for those living in them.

The initiative in Paraguay has focused on the Barrio San Francisco, where Itaipu has sought to build a sustainable urban development model with a comprehensive approach for families residing in flood zones in Asunción. The project, in its residential aspect, consists of 112 single-family homes and 888 apartments in 78 three-story buildings for 1,000 families. Each apartment block has courtyards equipped with recreational elements for the families.

In the process of building the apartments, innovative techniques were used in urban design and construction (i.e. monoblocks of cellular concrete) that have made housing development possible in record time in Paraguay, and which is seen as a replicable model for the future. This project started in 2015, and the effective delivery of the homes began in 2017.

In addition to the construction of integral housing solutions, the project also includes a civic center, multipurpose spaces, public child-care, a general school, a technical school, a police post, a health post, parish services, commercial and public spaces, a market zone, urban equipment, an industrial zone, financial institutions with microcredit offerings for resident families, and other community services. About 42% of the total project area is dedicated to public spaces and green areas, while the other 58% is built up on a 23-hectare site.

The neighborhood also has all the basic infrastructure services. This includes a potable water system, a sewage treatment plant, a sanitation sewer, storm drains, underground electrical installations with LED lighting, and free internet access (WIFI) in public spaces.

The plan takes into consideration the importance of mixed land use in the development of the projects, so the new neighborhood will have 48 commercial spaces where products and services will be provided, in order to enhance the economic development of the place via the generation of sources of employment, and a space for a textile industry that will give formal employment to the residents of the neighborhood.

Finally, considering the environmental aspect, more than 1,200 native tree species of high environmental value were planted, and more than 5,000 were also planted in the buffer zone of the Botanical Gardens, which turns the "San Francisco" project into the first sustainable neighborhood in the country and into a new urban model.

Autor: Itaipu Binacional

The Barrio San Francisco project included the following objectives:

• To strengthen the capacities of the families of the San Francisco Neighborhood in order to increase community self-management, co-responsibility, and integration in the areas of organization and maintenance of individual and collective spaces supporting the sustainability and resilience of the neighborhood.

• To strengthen the emergency system in San Francisco's Neighborhood, which is one of the key components for the Integral security of the inhabitants of the neighborhood and the area. Although a local police sub-station is already functioning in the complex with police personnel present daily in the area, support is important through the use of technologies considering the high volume of people who are concentrated in the place.

• To contribute to making the San Francisco Neighborhood a safe city model with equipped institutions and trained officials contributing to a secured environment for girls, women and adolescents.

• To improve the habitability of the houses with equipment and with training of the families for the development of good practices of coexistence, and protection of children.

• To implement all levels of Basic School Education recognized by the Ministry of Education and Sciences of Paraguay and, on reaching high school, offer the curricular program corresponding to Technical Secondary Education, with technical degrees in the specialties of computer science, electricity and Industrial garment production.

• To adopt a multidisciplinary scientific-humanist educational program for the Technical High School implemented on the basis of STEAM education (science, technology, engineering, arts, and mathematics) using laboratories with the pedagogical method of "learning by doing" projects, with emphasis on job training and emotional education so that it helps the student to be introduced to the new technological tendencies like robotics and nanotechnology, thus providing opportunities that help diminish the digital inequalities.

• To enable literacy training programs for young people and adults in order to improve basic and specific skills in employability, entrepreneurship training, short courses in emerging trades and microenterprises, business models, trade fairs, etc.

• To provide continuous training programs for trainers, tutors, technicians and other agents of the Educational Center that make possible the sustained development of quality education.

• To consolidate a social orientation team that helps students, both on a personal and social level, to develop cooperative interaction in the community and to facilitate psycho-affective development.

• To support the artistic training of the students of the San Francisco Center through workshops and training courses in painting, graphic design, ceramics, theater, dance, oratory, choral singing, musical instruments, and the creation of a youth symphony orchestra.

This Affordable Housing Initiatives are implemented through the execution of different contractual instruments for the construction and completion of infrastructure works and with the implementation of the different agreements. The Need-Based Family Housing Initiative has been carried out in the influence area of Itaipu and the municipality of Quedas do Iguaçu, in Brazil, since 2018. The Barrio San Francisco project is being implemented in Asunción, Paraguay.

Related Targets

The target most directly linked with this action is Target 11.1, which is to ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums. By including green areas and trees in the Barrio San Francisco project, this action also addresses Target 11.7, in that it provides access to green public spaces.

Challenges

For the Need-Based Family Housing Initiative, the biggest challenge with the implementation of this action is the bureaucratic and technical difficulty of the municipalities that may delay the execution of the agreements. Another challenging issue is the complexity in the selection process of the beneficiaries.

For the Barrio San Francisco project, one of the biggest internal challenges was the correct planning of the works and their subsequent inspection. Externally, a major challenge for this project was to convince families to leave their old homes, since most had very strong roots in the area. Moving involved a very important cultural change, access for the first time to basic community services, and the responsibilities that come with living in an organized community, especially for the families that had to move to apartments. The cultural change required very strong social assistance before and after the move, which was carried out by Habitat for Humanity, a nonprofit organization.

Lessons learned

The Need-Based Family Housing Initiative needs the active participation of all partners involved so that delays in the implementation phase can be avoided. For the Barrio San Francisco project, it is recognized that the mere delivery of the housing to populations in situations of poverty and vulnerability is not the total or final solution. Housing projects must be implemented with a comprehensive human approach, which allows beneficiaries to take ownership of the project and understand that the change in their social and economic situation depends mainly on their own will.

Results

In Brazil, the main result of the Need-Based Family Housing Initiative was the formalization of 18 agreements with selected municipalities, totaling 360 houses to be implemented.

In Paraguay, the execution of the San Francisco Neighborhood is an example of the improvement of slums affected by flooding, providing access to adequate, safe and affordable housing and basic services. This project included the creation of a new model neighborhood, from the infrastructure project and the construction of the houses to the transfer and location of the beneficiary families. It also included the necessary support for the insertion of the community into a new environment.

The results of the San Francisco initiative include:

- 1,000 families residing in flood zones in Asunción have been given access to decent housing.
- Access to basic services is provided (clean drinking water, electricity, sewage, waste collection, health services, security, financial and technological support, and public recreation spaces).
- Access to initial, primary, and secondary education is provided
- A community organization was created through the development of neighborhood commissions for the self-management of the neighborhood.
- Establishment of enterprises in the neighborhood were promoted, including through facilitating access to credit, and employment sources were created through the establishment of a textile factory and a waste separation plant.

Itaipu monitored the execution of the contracts, services and agreements through management, supervision and via the backing of the different bodies within the Superintendence of Works and Development.

Autor: Itaipu Binacional

2.

DAM SAFETY PROGRAM

Autor: Caio Coronel

Objective and description

The purpose of this action is to reduce the possibility of accidents and their consequences by keeping structures safe from any type of accident or extreme climatological event through instrumentation analysis, visual inspections, special studies and other actions. In order to implement this action, various sectors of Itaipu's Technical Board were mobilized, especially the Engineering and Construction Superintendents. The staff includes technicians and engineers who are fully dedicated to Dam Safety. They inspect the structure visually, check for possible oscillations, analyze field data, assess the dam's structural behavior, provide repairs when necessary, and execute International Civil Advisory Board determinations, among many other activities. This action is performed in Itaipu's Technical Directorate, and its actions could affect all areas of Itaipu. Activities related to dam safety started before the dam was built, with the determination of the best site for the Itaipu Hydroelectric Power Station and for future maintenance and extension of the project's useful life, and especially for the protection of life and heritage in the vicinity of the dam.

Related Targets

The target most directly linked to this action is Target 11.5, which is to significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations. The Safety Dam activities are designed to reduce the risk of all these negative impacts from possible disasters.

Challenges

One of the main challenges is to obtain better and more reliable data on the geologic formations underlying the dam and the Reservoir. It is necessary to constantly remain at the forefront of technological advances in the field of monitoring instrumentation and dam safety.

Lessons learned

The main lesson from this experience is the importance of continuing conducting geological investigations and using the best techniques and criteria to solve engineering problems and ensure the structural safety of the Hydropower Plant.

Results

Itaipu is a world reference when it comes to dam safety, and it has contributed to the creation of laws which establish national dam safety policies and iregulations. Also, a series of preventive mechanisms and instruments are voluntarily adopted by Itaipu. The Entity actively participates in the Brazilian Large Dams Committee (CBDB) and the International Large Dams Commission (ICOLD), and invests in initiatives in partnership with the Itaipu Technology Park (ITP), related to the contribution of Internet of Things (IoT) solutions to improving dam monitoring effectiveness.

During and after the construction of the dam, the intensification of geological investigations motivated the emergence of auxiliary structures that have made a major contribution to the Entity, such as the Itaipu Concrete Technology Laboratory (LCTI), installed at the plant, and the Center for Advanced Dam Safety Studies (CEASB), at the Itaipu Technological Park (ITP). Both contribute towards dam safety activities at plant and also to the general industry – including the academic community – with the knowledge gained from almost four decades of constant care of the structures of the dam. Engineers from various countries come to Itaipu to learn about this work, which is now internationally recognized.

By recognizing the importance of dam safety, Itaipu will continue to constantly invest in training and equipment to keep its structure fully safe, and the population protected. In order to monitor these results, during the excavation of the tunnels, several instruments were installed on the foundation rock and the shear-keys for periodic monitoring. The behavior and performance reflected by data from these instruments is always analyzed by Itaipu engineers. In 2018, the results of the computer simulations of the behavior of the structure of the dam, including cases of seismic events and thermal changes, became available. More than 750 students and volunteers participated in more than 100 research projects.


Autor: Caio Coronel

Autor: Itaipu Binacional

3.

IMPLEMENTATION OF THE SUSTAINABLE CITIES PROGRAM

Autor: Itaipu Binacional

Objective and description

The purpose of this action is to provide support for the establishment of a sustainable cities program network. The effort is based on developing actions focused on the UN Habitat Sustainable Cities Program platform and its tools, in line with actions carried out by Itaipu Binacional through its social and environmental programs. Itaipu works with communities and managers in 53 municipalities of Paraná and one in the state of Mato Grosso do Sul, in Brazil.

This action is being implemented through the following steps:

- Mobilization of the municipalities to join the Sustainable Cities Program via a letter of commitment signed by the mayor.
- Technical lectures in the municipalities for the mayor, municipal secretariat, directors and technicians, explaining the importance of using the platform, indicators and the Sustainable Development Goals (SDGs).
- Training of municipal technicians for the construction and maintenance of municipal observatories.
- Identification of common and regional indicators that correspond to the Itaipu agreements with the municipalities.
- Cataloging of good practices, projects and actions of municipalities that contribute to the sustainable development of the region.
- Preparation of goal plans, including preliminary diagnosis and action lines of the municipalities.
- Continuous monitoring of the indicators, verifying if the results of the developed actions meet the demands of the population, and the progress of the indicators.
- Dissemination of good practices developed at the "Itaipu Lake Regional Observatory", with concrete results and means to be replicated in the municipalities of the Itaipu area of influence.

This action is performed with the administration of the municipalities in the area of influence of Itaipu in Brazil, and has been in progress since 2012.

Related Targets

Considering its broad adherence to the SDGs, the Sustainable Cities Program is aligned with SDG 11 as a whole, but it is directly linked to Targets 11.3, 11.6, 11.7 and 11.a, given its action with the municipal governance branches to promote changes through public management and mobilization of organized society supporting sustainable development.

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Challenges

One of the main challenges is the need to constantly work on raising awareness among municipal managers about the importance of surveying and monitoring indicators, as well as their use to define strategic actions for sustainable development. As a result, it was very difficult to collect the first data for the development of municipal indicators, which did not have a previous database. There was also resistance from managers regarding the exposure of data on the platform, considering that the indicators could show potential weaknesses.

Lessons learned

Convincing municipal managers and mayors is essential for the platform to be effectively used as a management tool and for the implementation of the Sustainable Cities Program. It is also important to maintain a trained technical team committed to the maintenance of the platform, regarding data entry, development of local and regional indicators and identification of good practices. The advice and support of the municipal staff were also found to be necessary in order to ensure the sustainability of the program in the region.

Results

The results from this action include:

- The 54 municipalities of Western Paraná and the municipality in Mato Grosso do Sul State joined the Sustainable Cities Program;
- 54 city hall secretaries were trained to coordinate the program and more than 90 technicians were able to execute the Sustainable Cities Program in their municipalities;
- 13 municipalities trained inter-departmental teams for project management and indicator collection;
- 94 indicators were defined and are being implemented;
- Seven municipal plans were approved and published in the municipal observatories;
- The region submitted 137 projects to the 2nd Regional Good Practice Competition; of these, 73 were nominated for the 3rd National Sustainable Cities Award; and,
- The western region received ten awards at the program's 2nd National Good Practice Competition.

The monitoring of the results is through indicators launched on the Sustainable Cities Program platform, as well as the creation and application of Goal Plans. Another monitoring mechanism is the identification of good practices that contribute to sustainable development. The continuous release of indicators serves to identify areas that need intervention and also as an immediate response to the results from good practices implemented in the various sectors of the municipality.

Autor: Itaipu Binacional

4.

SUPPORT FOR MUSEUM MANAGEMENT AND INSTITUTIONS THAT PRESERVE CULTURAL AND NATURAL HERITAGE

Autor: Alexandre Marchetti

Objective and Description

In 1975, a year after the beginning of Itaipu's executive project, in the "Basic Environmental Conservation Plan", the Entity expressed concern about preserving the cultural heritage of the area affected by its creation. Through specialized consultancies, and within the legal needs, diagnostics and researches were conducted for the recognition, dimensioning and proposal of solutions for the impact that would be caused in the area by the construction of the powerplant.

The museums in Brazil and Paraguay were conceived as a measure that could help to preserve the cultural heritage of the area. They were not designed as museums that exclusively preserves collections, but as museums made for the community. In addition to the musuems there are memory houses, biological refuges, and preservation areas, among other cultural heritage preservation spaces in the region. The museums were created to be part of the development and cultural organization of the region. In this sense, they monitor and stimulate not only the regional cultural processes, but also the qualification of the public management of cultural heritage in the municipalities in which they operate, in order to boost the culture in all its dimensions: symbolic, citizen, patrimonial and economic.

The main objective of this effort is to rescue, preserve, enhance, and disseminate the historical-cultural, technical-scientific, and environmental heritage of Itaipu and the region, becoming a true instrument of communication and education among past, present, and future generations. There are three focal areas: 1) the Museum of Management and Collection Conservation, at the Itaipu Ecomuseum in Brazil; 2) the Valuing Regional and Institutional Heritage program at the Itaipu Tierra Guaraní Museum, in Paraguay; and 3) the Technical Advisory Program for professionals of preservationist institutions, in Itaipu.

In Brazil, the purpose of this action is to preserve the collections of the Itaipu Ecomuseum. The action is developed by the technical team of the Itaipu Ecomuseum via conservation efforts that include the archaeological collection of more than 200 sites, including geology, zoology, historical botany, and iconography being the result of research developed

during the construction of the hydroelectric dam. There are also itinerant exhibitions in the region that include themes related to the knowledge of the natural heritage of the territory. Within the scope of intangible heritage, there is active participation in events held at the entity where regional folk groups (i.e. Italians, Germans), popular folk groups (such as Folia de Reis, Maracatu), guitarists, and pipers are hired, thus contributing to maintaining this heritage. This action occurs at the Itaipu Ecomuseum and the traveling exhibitions in the municipalities of Itaipu's area of influence. It has been implemented since the creation of the Itaipu Ecomuseum in 1987.

In Paraguay, the Valuing Regional and Institutional Heritage program is conducted in the Entity's area of influence. It also includes activities being carried out at the national level through cooperation and inter-institutional support, in particular with the National Secretariat of Culture. They have been implemented since the creation of the Tierra Guaraní Museum, in 1979. In 2016, a new space for temporary exhibitions was created, increasing the options of cultural content to the program.

Within this action, there are three objectives:

- The rescue and socialization of the Institutional and Regional Cultural Memory. The objective of this action is to give continuity to the process of collection, organization, recording, and socialization of information and material objects related to institutional and regional memory. In order to implement this action, work is being undertaken both internally and externally for the preservation of Cultural Memory. On an external level, for example, traveling exhibitions are being held, and there is participation in regional Expos.

- The Management of the Museum. The new museography of the Tierra Guaraní Museum requires permanent management for its proper functioning, so as to stand out in the Entity's tourist circuit and preserve the institutional image. In order to implement this action, the museum carries out periodic maintenance work of the permanent exhibitions of the museum, as well as designing and planning temporary exhibitions and conducting the internal dissemination of activities and memorable dates, etc.

- The Technical Conservation of the Museum's Collection. The reception of new samples from donations or archaeological monitoring and biological collections is what this action strives to achieve. In order to implement this action, the museum conducts a continuous work of conserving the collection, which consists of periodic and systematic tasks.

In reference to the Technical Advisory Program for professionals of preservationist institutions in Itaipu, the museums and related institutions of the region lack sufficient professionals who are trained in specific areas to preserve the cultural heritage (such as curators, archivists, etc.). Thus, this action aims to meet the demand by offering technical advice to these institutions.

In response to the request of the municipalities and sometimes private collectors, technical visits are made and reports are prepared containing measures to be adopted to ensure the safeguarding of the heritage. The following support in the preparation of documentation is offered: registry books, museum plans, catalog sheets, support in structuring spaces such as technical reserves, and expography. In addition, training events within the preservationist scope are offered for collections management, conservation, security, transportation, etc. Support is also offered in the structuring of Culture and Heritage Councils.

Related Targets

The three focal areas of this action are most directly related to Target 11.4, which involves strengthening efforts to protect and safeguard the world's cultural and natural heritage. The preservation of the collection generated during the construction of the dam is of foundational interest to Itaipu, having been planned before the dam's construction. For the Technical Advisory program, this action is essentially focused on the processes that advocate training, instrumentalizing, and supporting the development of preservationist actions in the region.

Challenges

The main challenge faced by museums in Itaipu's area of influence is the lack of trained personnel devoted to the preservation of natural and cultural heritage of the region. In Brazil, there is insufficient staff to handle all the necessary tasks. In Paraguay, some additional challenges in implementing this action were cultural. There was little valuation of Cultural Heritage at the national level, with little legal protection in practice. There was also the challenge of lack of staff trained in heritage and conservation issues. Finally, there was also the challenge of limited financial resources.

For the Technical Advisory program, the biggest challenge is the involvement of, and comprehension by, the higher levels of public administration to undertake investments in hiring people, structuring preservation spaces, and creating specific public policies to ensure heritage preservation. Another important point is the frequent turnover of employees who work in these jobs, so that there is a lack of continuity in the work being done.

Lessons learned

In Brazil, one of the lessons learned in implementing this action is that there is a need to work conceptually on what is cultural and natural heritage, as preservation is essentially part of the community whose heritage is representative and therefore needs to be instrumentalized to actively participate in this process.

In Paraguay, the main lesson learned was that networking must be done at both national and international levels in order to obtain concrete results in the improvement of Heritage protection measures.

For the Technical Advisory program, one of the lessons learned was that the professionals involved in the preservation of the memory and regional heritage are motivated, but lack the support at the managerial level.

Results

In Brazil, more than 15,000 items which relate to the history of the construction of the plant and the region affected by the construction were preserved. In 1975, through the Environmental Management Plan, a museum was built to house these collections, showing the importance Itaipu gives to heritage preservation. Also, the creation of an Ecomuseum, and not a traditional museum, reinforces a priority that takes into account the heritage of the region. In the Brazilian side, besides the Ecomuseum built in Foz do Iguaçu, Paraná, other museums were created in 10 cities of the region. Such institutions are responsible for the preservation of the cultural heritage, memory and history of this territory.

In addition, exhibitions were created and circulated, such as "Aquatic Ecosystems: Knowledge is Preservation," "The Forest Through the Senses," "Herbarium: Between Paths and Knowledge," "Avis per Francisco," "40 years of Bela Vista Biological Refuge," and "Marcos Sá Corrêa: Paths and Footprints." These exhibitions have traveled to over 20 venues and have been seen by more than 50,000 people.

In order to monitor these results, Itaipu uses the number of collections stored in technical reserves, the number of inventories and cataloged collections, and the number of visitors in itinerant exhibitions that promote knowledge of the natural heritage.

In Paraguay, the results of this action include:

- Since the opening of the new exhibition, the Tierra Guaraní Museum received about 250,000 visitors, positioning itself as the second most visited attraction of the Itaipu Tourist Complex, after the Dam.

- Regarding international achievements, the Tierra Guaraní Museum is a member of ICOM (the International Council of Museums) and received an award from the AVICOM (International Committee for Audiovisual and New Image and Sound Technologies) in 2016 for a medium-length film made by the Museum.

- Since the opening of the Temporary Exhibition Hall in 2016, the Tierra Guaraní Museum has created a total of 15 temporary exhibitions on various topics of relevant cultural content at the national and international levels, such as the AOVYTA exhibit, the textile heritage of the Itaipu Museum, which was taken to the Ecomuseum in the city of Foz de Iguazú, Brazil. Two notable exhibitions were: (a) the Kunumi Pepy Temporary Exhibition: in the first half of 2019 the museum held this exhibition, which was the ancestral initiation rite of the Pai Tavytera people. It was open for four months. With this exhibition, it was possible to value and leave on record a large part of the ancestral rite, carried out today only by some Indigenous communities. The safeguarding strategies were carried out through the recording and dissemination processes of the exhibition; and (b) the Temporary Exhibition: 40 years of the Museum, a Cultural Itinerary. This exhibition was inaugurated in June 2019 and tells the story and the cultural journey taken by the Museum since its opening 40 years ago. The exhibition features emblematic objects from the Museum's collection.

- The Tierra Guaraní Museum has official recognition by the National Secretariat of Culture, as well as its collection that has been recognized as a National Cultural Property.

- The Tierra Guaraní Museum carries out actions of support and cooperation with cultural institutions of the State, which allows it to reach almost the entire country with its actions.

- The Tierra Guaraní Museum works with indigenous communities with the objective of preserving the original culture, particularly the Guaraní culture in the following aspects: language, ancestral knowledge, and crafts.

In order to monitor all these results, the entity employs the company's Program and Action Management System, with each year's goals being established that must be achieved in each action.

For the Technical Advisory program, the main results are:

- More than 100 professionals were trained on themes of cultural heritage preservation.

- Culture Councils were implemented in the municipalities of Toledo and Cascavel, and the Heritage Council in Foz do Iguaçu.

- 15 technical visits were conducted in the regional museum and legacy institutions.

Autor: Itaipu Binacional

5.

ITAIPU LINEAR PARK AND SUPPORT FOR GREEN INFRASTRUCTURE

Autor: Alexandre Marchetti

Objective and Description

One of the main objectives of this action is to collaborate in the creation of sustainable, inclusive, and accessible green spaces for Paraguayan society. In this sense, parks are key elements to maintaining a good quality of life, as they act as lungs that renew polluted air, while offering a place of relaxation and recreation. Another main objective is building (as necessary) access to these green areas with pedestrian paths, sanitary sewer systems, parking areas, security booths and others, since Itaipu is committed to both preserving these green spaces and making them safe.

Itaipu plans to implement this action through the construction and completion of the infrastructure works. Some intervened green areas are cited below as examples:

- The Itaipu Linear Park in Ciudad del Este: recovering a space for public use, which represents an ecological lung in the city, providing it with the necessary equipment and infrastructure for the enjoyment of citizenship.

- The Tati Yupi Biological Shelter: renovation of its facilities, such as the pier, so that visitors find it much easier to reach the shores of the Itaipu Reservoir and observe its landscape of flora and fauna.

- The Mbaracayú Reserve: Works such as the Interpretive Center, the modernized pier and the bird's eye viewpoint with the objective of establishing a sustainable tourism development that allows visitors to learn about the values of the natural resources available in the protected area.

- The Itabo Reserve: Works such as a park and the access portico, which was renewed by means of a significant investment.

- The Costanera Hernandarias and Tacurú Pucú Sports Center: a space open to the public for recreation. It also seeks to contribute to the tourist development of the area with the construction of Costanera Avenue, the playground for children, urban equipment, the placement of sand for the beach, the construction of an access road and vehicular passage, in addition to the complementary works that included the improvement of the toilets in the Tacurú Pucú Recreational and Tourist Complex, public locker rooms and the adjustment of the beach soccer field.

- Asunción Urban Park: Construction carried out with the total respect for the vegetation of the place, observing that not a single tree was removed from the future park.

- Caballero Park: With the aim of recovering the green space and providing it with security.

This action is being performed in the following areas of influence: the departments of Alto Paraná and Canindeyú, as well as the capital of Asunción. The action has been carried out since 2015.

Related Targets

This action is most directly linked to Target 11.7, which relates to providing universal access to safe, inclusive and accessible green and public spaces. Itaipu is focused on the recovery of green spaces for public use and to make them accessible, inclusive, and safe.

Challenges

The biggest challenges in implementing this action were the correct planning of the works and the subsequent inspection.number of partners implied the need to be able to meet different expectations within a limited budget. This was a huge challenge for this project. Distant institutions, difficulty of face-to-face meetings and several agendas at the same time have been limiting factors.

Lessons Learned

One of the main lessons learned is related to the appreciation of the public for these open and safe green spaces. In general, people are using these new parks and areas for relaxation and recreational purposes and the availability of services as well as the safety of the places make them more appealing for the public.

Results

The main results of this effort is the construction and operation of several spaces such as: the Itaipu Linear Park, the pier of the Tati Yupi Biological Shelter, the Mbaracayú Reserve Interpretive Center, the modernized pier and the bird's eye viewpoint, the Itabo Reserve park and the access portico, the Costanera Hernandarias and Tacurú Pucú Sports Center, the Asunción Urban Park and the Caballero Park.

Autor: Alexandre Marchetti

6.

SUPPORT FOR DEVELOPMENT PLANS OF ITAIPU'S AREA OF INFLUENCE

Autor: Itaipu Binacional

Objective and Description

It is very important for Itaipu to contribute towards the development of the different communities that are located in its area of influence; therefore, it carries out different activities in order to support the growth of the community school infrastructure to guarantee safe access to education, collaboration with the management of water supply systems; and, intervention in the improvement of transportation routes, among other actions. Some of these efforts will prepare cities and the communities for future climate scenarios, making them more resilient and adapted.

This effort has multiple objectives in different areas including:

- To provide educational institutions with a safe, efficient, and complete infrastructure where classes can be held.
- To provide the necessary technical and financial resources for infrastructures for mobile classrooms contributing to the socioeconomic development of citizens, through training and operational skills.
- To facilitate the transit in the different municipalities of the region by applying asphalt to roads and pavements, in order to promote the development and economic, social and cultural interaction, while also supporting other infrastructure work as necessary for the development of communities.
- To build emergency social housing.
- To maintain the drinking water system of the residential areas.
- To execute other internal works and services, for which local labor is hired such as maintaining electrical and water network systems in places such as the Environmental Centers or the Coordination buildings.

In order to implement this action, Itaipu will continue executing different contractual instruments for the construction of infrastructure works and other activities. It will also perform infrastructure work in schools in the region.

There is an agreement with Itakyry for the construction of social houses that makes it possible to mitigate the precariousness of living conditions of families established in the Santa Lucia settlement, Itakyry District. This action also protects families from inclement weather and contributes towards good security conditions. In addition, it strengthens the lives of families with safe and healthy conditions, and supports the process of the installation of wells that permit access to drinking water in the settlement. Furthermore, it improves the quality of life of the inhabitants from a sanitary point of view through access to higher quality water, and reduces the diseases caused by the consumption of contaminated water. Finally, this action built 200 popular houses and supported the provision of drinking water.

There are also several projects that have yet to be executed, but where preliminary studies have already begun. Some of the planned projects include a road transit solution to km 7, which is a sector with heavy traffic and many crossing intersections, to be implemented with other relevant partners and stakeholders.

This action is being performed in the areas of influence of the departments of Alto Paraná and Canindeyú in Paraguay.

Related Targets

This action is most directly linked to Targets 11.1 and 11.2, and 11.a. The action provides important support in the economic, social, and environmental dimensions linking urban, peri-urban and rural areas and strengthening national and regional sustainable development planning.

Challenges

Internally, the biggest challenges in implementing this action were the correct planning of the works and its subsequent inspection.

Lessons Learned

An important lesson learned is the need to involve all the relevant stakeholders in the design and implementation of solutions that support sustainable cities.

Results

Positive results have been accomplished in the specific areas of work including schools, roads and housing. Many activities are also in a planning stage and are expected to be completed with the support of Itaipu.

Itaipu monitors the execution of the contracts, services and agreements through management, supervision and via the backing of different bodies within the Superintendence of Works and Development.

Autor: Itaipu Binacional

7.

BIOSPHERE RESERVE IN BRAZIL AND PARAGUAY

Autor: Itaipu Binacional

Objective and Description

Itaipu Binacional is the first power plant to become part of the Global Biosphere Reserve Network. Its protected areas of more than 100,000 hectares was recognized as a nucleus zone of the Reserve, which is the highest stage of protection in the category of Biosphere Reserves created by UNESCO in 1972. With this status, Itaipu is committed to continuing the environmental actions that have already been implemented and will have a set of rules to follow. It can also participate in and benefit from the sharing of research from the other reserves around the world, in addition to strengthening its institutional role as an organization that actively participates in the preservation of the environment. These activities support the sustainability and resilience of cities, human settlements and rural communities in the overall area of influence of Itaipu. Another important achievement for Itaipu is the creation of a Decentralized Management Unit (UGD), which is a new instance in the management system of the Man and the Biosphere Program of UNESCO. Itaipu will host and coordinate the first UGD of the Program in the world, which also shows the commitment of the power plant with the ecosystem.

Itaipu's nucleus zone of the Biosphere Reserve includes ten protected areas in Brazil and Paraguay and the protection belt along the Reservoir. These areas ensure the conservation of animal and plant species threatened by human activity and helps to assure ecosystem services. Brazil holds the biological sanctuaries Bela Vista (1,781 ha) and Santa Helena (1,482 ha), while Paraguay runs the natural reserves of Tati Yupi (2,000 ha), Pikyry (1,109 ha), Itabó (15,208 ha), Yvyty Rokai (2,202 ha), Limoy (14,828), Pozuelo (2,764 ha) and Carapa (2,575 ha), and a Binational Reserve Mbaracayu (1,356 ha) managed by the teams from Paraguay and Brazil.

Biosphere reserves have three interrelated zones that aim to fulfill three complementary and mutually reinforcing functions: 1) the core areas, which comprises a strictly protected ecosystem that contributes to the conservation of landscapes, ecosystems, species and genetic variation and corresponds to the 100,000 hectares of Itaipu's protected areas; 2) the buffer zone , which surrounds or adjoins the core areas and is used for activities compatible with sound ecological practices that can reinforce scientific research, monitoring, training and education. It includes the biological corridors between conservation units and indigenous communities, among others; 3) the transition area, which is the part of

the reserve where the greatest activity is allowed, fostering economic and human development that is socio-culturally and ecologically sustainable. It corresponds to dispersed and low-impact human settlements or consolidated agricultural areas. In Brazil, it involves the 29 municipalities of the Paraná Basin 3, which is part of Itaipu's area of influence. In Paraguay, the transition area involves 15 municipalities. These protected zones mobilize all sectors of local society to reconcile the need for nature conservation with the social and economic development of communities living in or around their territory (Reserva da Biosfera da Mata Atlântica, 2018).

In Paraguay, the whole biosphere reserve (which includes the protected areas of Itaipu) is called ITAIPU Biosphere Reserve and covers a surface area of over a million hectares. It comprises an area of semi-deciduous sub-tropical forest also known as the Upper Paraná Atlantic Forest. It is one of the most important ecosystems for the conservation of biological diversity on a global scale, because of the large number of endemic species, richness of species and original cover. There is a permanent population of over 450,000 inhabitants.

In Brazil, the biosphere reserve is called the Atlantic Forest Biosphere Reserve and it covers approximately 78 million hectares, which represents 66% of the Atlantic Forest Biome. It includes remnants of the Atlantic Forest and relevant secondary forests, tropical humid forests in mountain and connected highland systems and coastal marine environments (Reserva da Biosfera da Mata Atlântica, 2019).

Related Targets

This initiative is directly linked to Target 11a, which aims to support positive economic, social, and environmental links between urban, peri-urban, and rural areas by strengthening national and regional development planning. Itaipu is supporting these objectives with its Biosphere Reserve that allows for the harmonious interconnection of agricultural areas, forest remnants, protected areas, rural communities and cities establishing a comprehensive approach to the conservation of natural resources that are vital for this region.

Challenges

The greatest challenge for this action is to achieve joint and coordinated work between the different entities and/or organizations, whether state, municipal, or civil society, in order to achieve its objectives with a view to the sustainable development of the area and the countries.

Lessons Learned

The active participation of the different sectors facilitates the execution of initiatives in the field. In addition, the importance of the work of a multidisciplinary team is worth noting, considering the different dimensions that can be covered.

Results

The main results of this action include:

- The formation of the Itaipu Biosphere Reserve Management Committee (an Internal Committee of Itaipu).
- Training regarding the UNESCO Man and Biosphere Program for the Management Committee of the Itaipu Biosphere Reserve.
- A Multisectoral Committee of the Itaipu Biosphere Reserve in the process of consolidation.
- A Communication Plan for the Itaipu Biosphere Reserve which is in its final stage.
- A Manual of functions of the Management and Multisectoral Committee of Itaipu Biosphere Reserve.
- Preliminary projects for buffer zones of the elaborated core areas.

Autor: Itaipu Binacional

8.

REVITALIZATION OF PUBLIC AREAS

Autor: Itaipu Binacional

Objective and Description

The purpose of this action is to create and revitalize Itaipu's public spaces and those leased to the Municipalities for the development of leisure, sports, cultural and tourist activities and for commercialization of agricultural products. The action is being implemented through agreements with neighboring municipalities and through contracts directly made with Itaipu in its area of influence since 2018.

The effort includes the development of bike paths and hiking trails and the creation of a municipal market. The new municipal market will be built in an unused space of Itaipu (the old Cobal building) which will be revitalized to allow residents of Foz do Iguaçu and tourists to get closer to the full culture and cuisine of the area. This space will allow the valuing of the regional agro-industry production and commercialization of family farming products and will be configured as another tourist and cultural attraction for Foz do Iguaçu and region.

Related Targets

This action is most directly related to Target 11.7, which aims to provide universal access to safe, inclusive and accessible green and public spaces, in particular for women and children, older persons and persons with disabilities. These spaces, that are being revitalized, were spaces frequently maintained locally but that needed larger investments. The focus of the revitalizations is to create safe spaces for the population to enjoy, through the implementation of adequate lighting, access and structural reforms in buildings.

Challenges

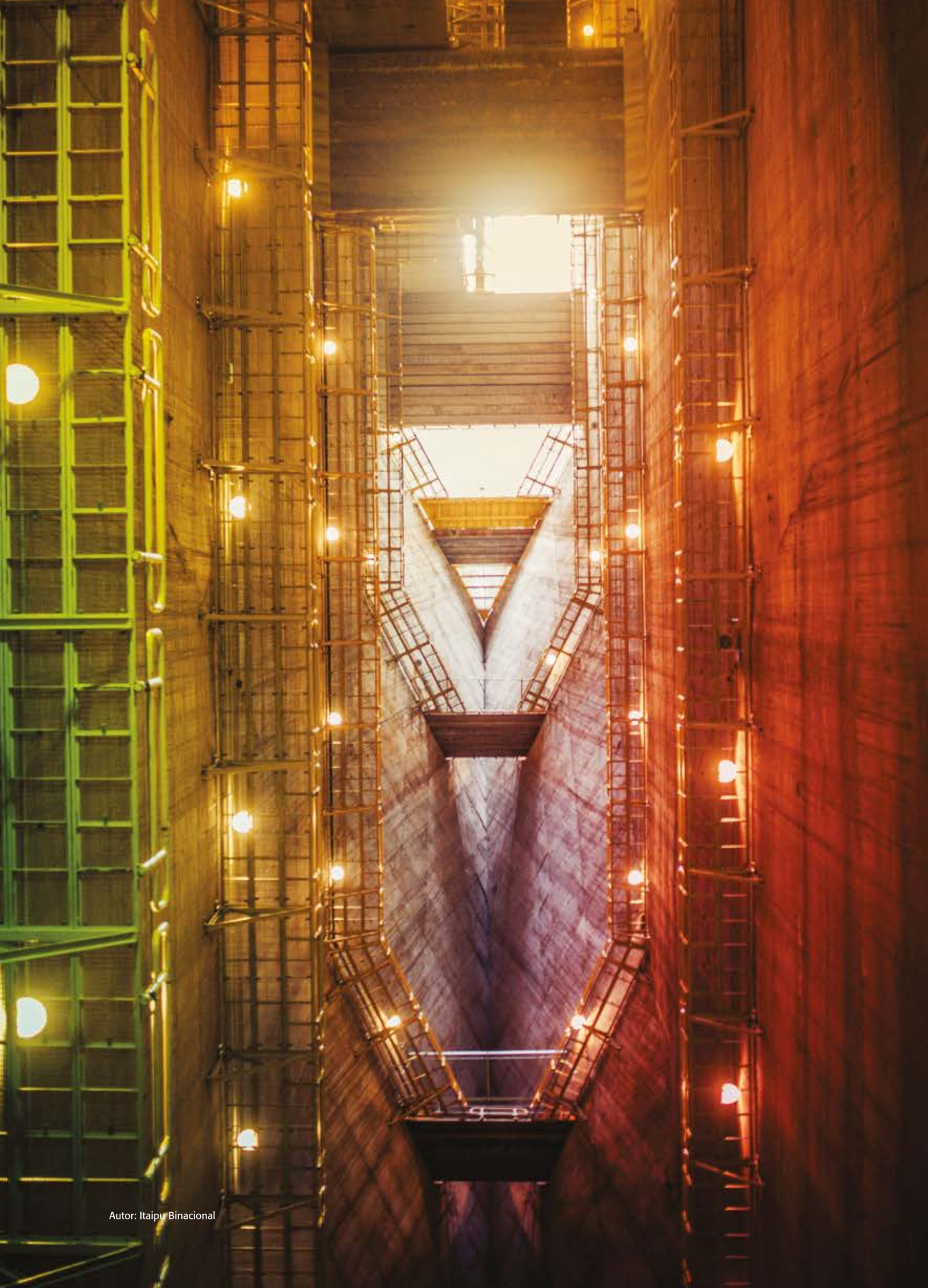
Since this work is only in the planning stage, a major challenge relates to defining a sustainable development management model that supports the different project objectives. Another challenging activity is the coordination of technical and logistic work with participating municipalities and departments.

Lessons Learned

Although the activities are in a planning stage, there is strong interest by relevant stakeholders for the development of this type of projects.

Results

There are no results from this action yet since the action has not yet been completed.



Autor: Itaipu Binacional

9.

WEST 2030:
SUSTAINABLE DEVELOPMENT COOPERATION

Autor: Itaipu Binacional

Objective and Description

This project aims to contribute to the implementation of the SDGs and the 2030 Agenda for Sustainable Development at the local and municipal levels in Western Paraná. The project aims to coordinate actions in the public, private and non-profit segments of each municipality. It also supports building tools for monitoring, evaluating and training local managers and leaders to strengthen the progress in the implementation of SDGs in the region.

The effort has been divided into three areas: (1) development of local joint action agendas, which were created through a cycle of dialogues involving the three sectors of society; (2) development of know-how, which included the creation of four analytical tools for monitoring, planning and disseminating information (SDG situational diagnostics, monitoring platform, future scenario report, and rapid integrated assessment); and (3) training and qualification activities using the action agendas and analytical tools to enhance local capacity for the drafting of projects aligned with the 2030 Agenda. The analytical tools use a methodology developed by UNDP to check the level of local planning alignment with the 2030 Agenda and the SDGs.

The project is being implemented in the 54 municipalities of Western Paraná, Brazil, which has been the area of influence of Itaipu since 2016.

Related Targets

The project is linked to Targets 11.3 and 11.a related to planning, local capacity building and participatory management. The Action Agendas were developed with the participation of various sectors of society to ensure a common agenda for sustainable development, with some municipalities having created action plans based on local priorities and challenges to achieve the SDGs of the 2030 Agenda.

Challenges

One major challenge was the development of the initial network of contacts so that an effective sensitization process would take place. It also was necessary to ensure the engagement of local political leaders. The coverage of the extensive target area represented another challenge.

Lessons Learned

Adaptation to local reality: the initial mobilization processes and the lack of awareness of the 2030 Agenda by local leaders caused the methodology of municipal dialogues to be modified to meet local needs. Size of municipalities: after the beginning of the project, a very different operating dynamic was identified

between the larger and smaller municipalities. Therefore, two distinct sensitization and mobilization strategies were developed.

Installed technical capacity: in some smaller municipalities, there were limited technical staff and local leaders. This had to be considered, so as not to generate work overload or limit the Agenda implementation process.

Partnerships: The coordination and integration of existing projects in the territory through partnerships was a strategy used throughout the project that created synergies and should be considered in the planning of new sub-national projects as a good strategy to optimize resources and enhance actions.

Technical assistance: after the beginning of the second phase of the project, it was observed that more significant support in the drafting of action plans was necessary.

Millennium Development Goals (MDGs): Municipalities with a history of raising awareness of the MDGs or with acting Sustainable Development Councils were more likely to be involved in a 2030 Agenda project.

Private sector: The sponsoring of the 2030 Agenda by trade associations and local cooperatives brought a different dynamic to the project, with the participation of non-traditional actors who provided new actions and new perspectives, reinforcing the idea that the responsibility for sustainable development and for reaching the 2030 Agenda falls on everyone.

Results

The dialogues for Sustainable Human Development to define local Action Agendas included:

- 6 Micro-Regional Seminars with 358 participants;
- 54 Awareness-raising and local priority setting workshops with 1,555 participants;
- 30 Planning Workshops with 600 participants;
- 3 Mobilization Panels for the 2030 Agenda with 255 participants;
- 1 workshop with data experts to discuss SDG monitoring indicators with 42 participants;
- 2 SDG Indicator Workshops with 130 participants;

Among the 2,940 people directly mobilized so far, there were interested citizens, representatives and leaders of the municipalities, and members of cooperatives and civil society organizations.

Assessment and monitoring activities included:

- 55 SDG baseline diagnostics designed to support the construction of local agendas.
- The development of the SDG Monitoring Platform with 67 SDG indicators (with disaggregation by gender, race and age) for each of the 54 municipalities and aggregated data from the region.

This process of implementing the SDGs locally in the municipalities has already generated results that go beyond quantitative measurements. Some municipalities have created agendas accelerating programs, such as Toledo, others have begun to seek solutions to local problems, such as Quedas do Iguaçu, all seeking to support the achievement of the SDGs. Due to the receptivity and demand, it is clear that the project has touched the local actors as regards to the importance of the 2030 Agenda and has mobilized intensively people in the three sectors of the society to work together without leaving anyone behind.

Results can be tracked using the SDG Monitoring Platform available at www.oestepr2030.org.br which includes local SDG indicators and a monitoring area for local plans. In addition, the project keeps a collaborator in constant contact with the municipalities to support them in the progress and monitoring of the actions being implemented. These actions will be included in the annual progress reports.

INTERLINKAGES WITH OTHER SDGs

Our actions in the SDGs

Our approach - Integrated actions in the territory

There are several interlinkages between the activities by Itaipu related to SDG 11 and other Sustainable Development Goals. The most direct interlinkages are with SDG 1, which relates to raising people out of poverty and to improve their quality of life; SDG 3, which relates to good health and well-being that will invariably result from the safe and supportive environment of successful sustainable cities and communities; SDG 6, which relates to giving access to safe and affordable drinking water and adequate sanitation in the communities; SDG 7, relates to ensuring access to affordable, reliable and modern energy services; SDG 10, which relates to reduced inequalities among the vulnerable people without housing or at risk of losing their culture and heritage; SDG 15, which relates to ensuring the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services and integrating ecosystem and biodiversity values into national and local planning, and SDG 17, which relates to the promotion of partnerships at all levels.

Autor: Itaipu Binacional

CONCLUSIONS

Autor: Daniel De Granvile

Itaipu main efforts towards achieving SDG 11 of Sustainable Cities include activities that address the provision of affordable housing to families that have limited financial resources or live in flood zones. Itaipu additionally supports the preservation of natural and cultural heritage through the creation and maintenance of the Ecomuseum, in Brazil, and the Tierra Guaraní Museum, in Paraguay. To lessen the possibility of a natural disaster that could affect the population living in the area of influence, Itaipu maintains advanced programs of dam safety, playing a key role in the field at international level. The Biosphere Reserve - a major biodiversity conservation effort by Itaipu, with worldwide recognition - supports the sustainability of cities and natural resources in the region. Itaipu also has a partnership with the UN Habitat for the creation of the Sustainable Cities Program platform. Through these and other initiatives, Itaipu is successful in ensuring safe and affordable housing and sustainable communities while also preserving crucial natural and cultural heritage in its area of influence.

INFOGRAPHIC
SDG11 SUSTAINABLE CITIES AND COMMUNITIES

DAM SAFETY PROGRAM

More than **750** **students and volunteers** participated in more than 100 research projects in 2018

Development of technical and scientific knowledge regarding dam safety

MUSEUM MANAGEMENT AND CULTURAL HERITAGE PRESERVATION

In Brazil, exhibitions traveled to over 20 venues and seen by over **50,000 people**

More than **100 professional trained** in the region on cultural heritage preservation

SUSTAINABLE CITIES PROGRAM NETWORK

73 projects nominated for the 3rd **National Sustainable Cities Award**

13 municipalities trained inter-departmental teams

Tierra Guaraní Museum in Paraguay received about **250,000 visitors**

Tierra Guaraní Museum has created **15 temporary exhibitions**

In Brazil, more than **15,000 items** preserved

54 municipalities joined the Sustainable Cities Program

EDUCATION AND PARTNERSHIPS

ITAIPU LINEAR PARK AND GREEN INFRASTRUCTURE

Construction and operation: Ciudad del Este Linear Park, pier of the Tati Yupi Biological Shelter, Mbaracayú Reserve Interpretive Center, modernized pier and the bird's eye viewpoint, Itabo Reserve park, Costanera Hernandarias and Tacurú Pucú Sports Center, the Asunción Urban Park and the Caballero Park.

ITAIPU BIOSPHERE RESERVE

Creation of **Itaipu Biosphere Reserve** Management Committee

Manual of functions of the Management and Multisectoral Committee

Training UNESCO Man and Biosphere Program

POVERTY ERADICATION AND INEQUALITIES

AFFORDABLE HOUSING FOR VULNERABLE FAMILIES

1,000 families with access to decent housing at **Barrio San Francisco** in Paraguay

360 houses in **18 municipalities** in planning stage in Brazil

Autor: Itaipu Binacional

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Aerial view of the dam
Daniel Snege/Itaipu Binacional

ITAIPU BINACIONAL

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SUSTAINABLE WATER & ENERGY PARTNERSHIP

11

SUSTAINABLE CITIES AND COMMUNITIES