

DUKEENGAGE ITAIPU

Researching the potential for sustainable development and growth for Paraguay and Brazil

Dates: May 17 – July 14, 2020

(Dates subject to change up until the point of departure.)

Service Themes

- Community Development & Outreach
- Environment & Conservation
- Public Policy
- Science & Engineering

Program Focus

Partnering with organizations and research sites in Brazil and Paraguay to make recommendations regarding Itaipu dam electricity after 2023 when the current energy agreements expire. Recommendations will focus on ways to spur economic and sustainable growth for both countries.

Program Leaders

- Christine Folch is an Assistant Professor in the Department of Cultural Anthropology with a secondary appointment as an Assistant Professor in Environmental Sciences and Policy Division at the Nicholas School. Her research focuses on energy and natural resource politics, with specific studies in Itaipu Dam and Paraguay.
- Luana Marangon Lima is a Visiting Assistant Professor of energy and environment in the Environmental Sciences and Policy Division at the Nicholas School and the Associate Director for Educational Programs at the Energy Initiative. Her research and teaching focus on optimization methods and data analytics applications to energy systems. Most of her work is on Brazil, where she is originally from.

Program Overview

Itaipu Binational Dam is a hydroelectric dam on the Paraná river located on the border of Brazil and Paraguay. The Dam is a leader in renewable energy production, equally owned by both countries, with the joint-ownership terms established by the Itaipu Treaty in 1973. Because Paraguay does not have sufficient demand to consume its 50% share, it has historically exported the majority of its electricity to Brazil: its 14,000 MW of installed capacity provide around 90% of the electricity consumed in Paraguay and 15% of the electricity in Brazil. As we approach the Treaty renegotiation in 2023, energy pricing and distribution agreements are up for debate.

During the summer students one group of students will be located in Brazil, and another group in Paraguay, to try to understand what the dam means for both countries. Students will partner with local educational institutions and researchers on both sides of the border to help understand how the renegotiation can be used as an opportunity to advance sustainable development in both countries and how they can benefit from the renegotiation. At the end of the program students will come together to do a live model of the renegotiation, representing both parties.

Goals for Students

By participating in this program, students will gain an understanding of the connections between energy and social development. More specifically how one of the world's largest hydroelectric dams can shape the politics and economics of Brazil and Paraguay.

Partnership Opportunities

Students in Brazil will primarily be working with Parque Tecnológico de Itaipu (PTI), a teaching and research center located in the barracks that used to house workers during the construction of the dam. The PTI now houses a business development center and a university campus, the Universidade Estadual do Oeste do Paraná (UNIOESTE) engineering and science center. DukeEngage students will partner with faculty and students at PTI, researching how the renegotiation of the treaty in 2023 might benefit Brazil.

- In Brazil, Itaipu Binacional Dam itself will also be a partner. Students in Brazil will visit the dam to learn how it was built, how power is produced, and how the dam interfaces with local ecosystems. We are hopeful that students in Brazil will have the opportunity to complete a short-term (1-2 week) internship at the dam during the program, to better understand the daily routine and operation of the dam.

Students in Paraguay will focus on the question of how Paraguay can use its renewable energy surplus to jumpstart sustainable development. Through community contacts in NGOs and scholarly collaborations at Paraguayan universities, students will assess and even give input on public policy interventions, development projects, and social ventures that are ecologically, socially, and financially sustainable.

- Paraguay students will partner with researchers at the [Energy Systems Research Group \(National Polytechnic University\)](#) and the Latin American Social Sciences Institute/Paraguayan Center for Sociological Research (the premiere social science education and research faculty in Paraguay) to examine how the treaty has been administered in Paraguay, how growth in Paraguay might influence the desired outcomes of the treaty negotiation, and how a change in the distribution of electricity might impact and benefit the country.
- However, students in Paraguay will also spend a large portion of their time working directly with local NGOs tackling sustainability issues in the *bañados* (riverine shantytowns) of Asunción, to better understand how citizens use electricity in their daily lives and livelihoods. Examples include: [Orquesta de Instrumentos Recicladados de Cateura](#) (which hand crafts instruments from the massive Cateura trash dump for use in a local youth orchestra, a way to address waste management, entrepreneurship, and art); Temporary Refuges for Flood Victims in *Bañado Sur* (addressing the annual crises of flooded housing due to climate instability); and organizations tasked with helping to implement the Master Plan for the Coast Defense Project of Asunción (a civic-public urban plan partnership designed to develop sustainable communities in the *bañados*).

While applicants may express preferences for Paraguay/Brazil, or for specific opportunities, and those preferences will be taken into account, accepted students must be open to any placement in the program.

Program Requirements

Language: In Paraguay, intermediate-level Spanish is required by the beginning of the field assignment, as students will be working directly with local communities and scholars. Students may be native Spanish speakers or have successfully taken Spanish language courses, including AP credit. Or they may discuss and develop a plan to attain Spanish language proficiency with the program director, including possibly taking Spanish 101 or 102 in Spring 2020.

In Brazil, Portuguese or Spanish would be beneficial, but is not required. There is a Portuguese intensive one-semester course in spring 2020: Portuguese 112 - accelerated elementary Portuguese.

Coursework: No specific coursework is required. However, applications will be stronger from students with a background or training in energy, environmental sciences, justice, or economics. Students are encouraged to take at least one of the courses listed in Curricular Connections, below.

Personal Qualities: Students should be able to work on projects with autonomy. Must be open to working closely with other students and community partners.

Program Details

Description of community: The students in Brazil will be located in Foz do Iguaçu, which is the home of the Itaipu Dam. The city is known for its cultural diversity and for being a Triple Frontier location where Brazil, Paraguay and Argentina meet.

The students in Paraguay will live in Asunción (the capital), where the treaty is administered. Asuncion is also home to Los Bañados (the river-front shantytown). This community faces extreme poverty and infrastructure challenges.

Housing and meals: Students will be housed either in university dormitories or apartment-style housing in safe neighborhoods in Asunción and Foz do Iguaçu. Rooms will likely be shared. Housing will have electricity and plumbing.

Local Safety, Security, and Cultural Norms: If you have special needs related to health, cultural, or religious practices, please contact the DukeEngage office, dukeengage@duke.edu, to discuss whether or not your needs can be reasonably accommodated in this program.

For information related to how your religion, race, sexual/gender identity, ability or other aspects of your identity might impact your travels, we recommend starting with the Diversity, Identity and Global Travel section of the DukeEngage website.

We encourage students who have questions or concerns about health or safety in international programs to check Duke's [International SOS](#) (ISOS) portal for relevant information.

Reflection and Enrichment: Students will meet weekly to reflect as a group, write a weekly personal journal entry, and write an occasional blog post. At the conclusion of the program we hope all students will participate in a closing retreat to share their experiences and learnings from the program.

Curricular Connections

While all students are welcome to apply, this program may be of particular interest to students studying energy, environment, public policy, cultural anthropology, economics, or engineering. The following courses would be relevant to this program. Students who take one or more before the program would benefit and can contribute greatly to this project.

- Energy and the Environment (ENVIRON/ENERGY 231) - Gateway course for the Energy and Environment Certificate
- Engineering Sustainable Design and the Global Community (CEE 315/ENVIRON 365/PUBPOL 211)
- Economic Analysis of Current Energy Issues (ECON 325S)
- Introduction to Environmental Sciences and Policy (ENVIRON 102)
- Environmental Law and Policy (ENVIRON 265)
- Environmental Economics and Policy (ENVIRON 339)
- Energy Futures and Environmental Justice (ENVIRON 343S / CULANTH 345S)
- Special Topics in Environmental Sciences and Policy (ENVIRON 290S)

Students who participate in this program will be well positioned to apply for a Bass Connections year-long project in the energy and environment theme area before or after the DukeEngage experience.