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Department of Environment and Development Research Lines

Research Line #1: Sustainable Food Systems

Sustainable food systems are context specific and relate to incorporating sustainable practices that support human and environmental well-being for current and future generations. Such practices include but are not limited to, traditional and Indigenous knowledge about food systems, sustainable and inclusive technologies, the study of agricultural markets and how these shape sustainability and health. This research line also corresponds to one of the specializations in our department.

Research Programme 1: Agroecology

Description: Agroecology has been defined by the FAO of the United Nations as the solution to all the current SDGs; furthermore, women have been reported as central to agroecological systems and food sovereignty. Despite the importance of women in agroecology, women have a history of being made invisible in agriculture. This research line intersects directly with SDG2 (food security & sustainable agriculture) & SDG 5 regarding gender equity.

Project 1: Women's Agroecological Knowledge and Practice in the Caribbean, Costa Rica

Description: In Costa Rica, women are central to agroecology and face many barriers to its practice and implementation. This project is the documentation of diverse women's agroecology knowledge and practices to support sex and intersectional disaggregated information in the field of agroecology. Furthermore, this project is designed to better understand diverse women's challenges in on the ground agroecology as well as in its politics and national programmes.

Professors working on this project: Dr. Olivia Sylvester (UPEACE), Dr. Gabriela Cuadrado-Quesada (IHE Delft Institute for Water Education, The Netherlands)
Funding: IHE Delft Institute for Water Education (The Netherlands), POLKA: Policy Learning, Local Knowledge and Advocacy - strengthening the links between practice and policy for food production and ecosystem sustainability in Sub-Saharan Africa, project number 110784 (2022-2026)



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Student Research Assistants: Amelia Shortt (DED intern, University of Calgary, 2023), Ghozllane Selouani (DED intern, University of Calgary, 2023), Nat Tayahua, (EDP-SFS 2024-2025), Nancy Candel, (EDP 2024-2025), Gema Gálvez Gamboa (EDP-SFS 2024-2025)

Research Programme 2: Pesticides and Agriculture

Description: There is a complicated relationship with pesticide uses in cash crop farms that is driven by many factors. These factors range from agricultural policies and laws to human behaviors and actions as well as a culture of pesticide use. Although the types of pesticides used globally have changed over time, there has been a growing and continued dependance on them. For instance, although DDT was discontinued in many countries due to widespread health and environmental concerns with its toxicity, in the 21st century, new pesticides were developed and widely adopted. This research programme critically examines the impacts of the accelerated use of pesticides on human and land health.

Project 1: Pesticides, Human and Land Health in Costa Rica

Description: Costa Rica faces include the direct and indirect environmental and health impacts on Costa Ricans caused by pesticide runoff and exposure. Current policies on pesticides may also lack proper translation and implementation by Costa Rican farmers and exporters (Galt, 2014). The purpose of this paper is to analyse how key pesticides (e.g., Bromacil, Glyphosate, Chlorpyrifos, and Paraquat) are used and regulated in Costa Rica and to understand the environment and social impacts these pesticides pose. Current literature displays a wealth of knowledge on the bio-chemical functioning of pesticides but does not address the environmental and social impacts these pesticides pose to central American countries, such as Costa Rica, which happens to be one of the biggest consumers of pesticides globally. This project examines the latter research gap.

Professors working on this project: Dr. Olivia Sylvester (UPEACE)

Student Research Assistants: Natalia Delgado Robles (EDP 2023-24), Francesca de Los Angeles Di Leoni (RCPD 2023-24), Ghozllane Selouani (DED intern, University of Calgary, 2023), Wen Jia (EDP-SFS 2019-2020)

Funding: The UPEACE Research Fund 2023/24 academic year (Dr. Sylvester)



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Research Programme 3: Agrotourism and Food Security

Description: Agriculture is one of the most ancient and essential economic sectors and tourism is one of the newest and most rapidly growing. This research explores the interplay of agricultural and tourism as a tool for regenerative development in the face of Covid-19 disruptions. Worldwide, the collapse in international travel represents an estimated loss of USD 1.3 trillion in export revenue for 2020 alone (UNWTO World Tourism Barometer, 2020), causing potential food insecurity of those that rely on tourism jobs. Some scholars assert that the current upheaval in tourism caused by Covid-19 provides a space to reflect on the injustices in the current tourism system (OECD, 2020; Higgins-Desbiolles, 2020; DePardo & Ladeiras, 2020). This line of research focuses on the experiences of a community where agricultural traditions overlap with a robust ecotourism industry. It also explores the potential economic and ecological diversity potential of agrotourism businesses, particularly for rural women.

Project 1: Costa Rican Social Solidarity Economy Efforts: Linking re-localized food to just tourism

Description: Social and solidarity economies (SSE) is a new development paradigm, or alternative to development, which arises from community-based social organizations. This form of sustainable development focuses on scaling up social and solidarity economies and creating spaces for capacity—building to counter local constraints (Vieta, 2014). Rural populations and peasants have created knowledge and skill training networks and circular exchanges outside the national monetary system, including local currencies. These movements recognize development challenges will not be delivered by external programs but developed from within, by communities. The community of Monteverde has renewed its SSE practices since the downturn in tourism caused by Covid-19 highlighted food insecurity and over-reliance on a single economic sector. This thesis applies critical development theory to assess the benefits of these SSE projects in relation to enhanced food security, social solidarity, and economic stability.

Working on this project: Mary Little, LLM & Ph.D. Candidate

Funding: UPEACE PhD Scholarship (2021-Present)



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Research Line #2: Indigenous Perspectives on Environment and Development

Research Programme 1: Indigenous methodologies

Description: Linda Tuhiwai Smith (2012) describes how research has been historically linked to Western imperialism and colonialism. Historically, research has been conducted by and for white people of European descent on Indigenous research subjects. As a result, in academic settings, Indigenous people's stories have been told by outsiders, and this has led to misrepresentation and denial of people's rights to self-determination. Based on this history, Indigenous scholars have demonstrated how Indigenous values can guide research to transform a dark academic history. Some of these values include (a) an epistemological position that differs from Western thought and ways of knowing; (b) accountability to family, clans, places, and non-human beings or nature; (c) knowledge emerging from relationships with the land as well as from non-human beings, among others (e.g. Battiste, 2013; Cajete, 2000; Castellano & Reading, 2010; Hart, 2010; Kovach, 2009; Tuhiwai Smith, 2012; Wilson, 2008). When Indigenous values guide research, the impacts can include (a) accurately representing people and their culture (Sylvester & García Segura, 2017), (b) individual and community healing (Marsh et al., 2015), and (c) the survival of identities (Castellano, 2004).

Project 1: Ulàpeitök as a research methodology

Description: Ulàpeitök is a Bribri form of Indigenous development that differs from dominant capitalistic forms of development. Ulàpeitök has been only recently documented in the English literature (Sylvester et al. 2021; Sylvester & Garcia Segura, 2017) and via the oral transmission of knowledge in Bribri communities. In Costa Rica and internationally, academics and Indigenous communities have requested more information on this methodology to propose alternative forms of development that do not reinforce extractive approaches to the natural and human worlds. This project seeks to first, publish information in Spanish and Bribri on this topic and to apply this approach to community-based Indigenous research.

Professors working on this project: Dr. Olivia Sylvester (UPEACE), Alí García Segura (Universidad de Costa Rica)

2025-2026 – This research will be transformed into a book for UPEACE press



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Funding: Canada Fund for Local Initiatives (CFLI), Canadian Embassy, Costa Rica (2022-2023), The UPEACE Research Fund 2024/25 academic year (Dr. Sylvester)

Research Programme 2: Indigenous ancestral practices

Description: Indigenous ancestral systems are based on principles linked to land health and sustainability and are created with Indigenous wisdom. Caring for the land and non-human are linked to creation histories and Indigenous worldviews. Research, however, can be detached from the deep and complex Indigenous worldviews that are linked to the sustainable practices that we observe on the land (Sylvester & García Segura 2017). This detachment is why Indigenous scholars and practitioners have called for a greater engagement with Indigenous language and knowledge systems in environmental and sustainability studies (Enns, 2015; Kimmerer, 2013).

Project 1: Huetar Indigenous Elders cultural practices regarding art and the environment

Description: Huetar Indigenous Elders requested that Dr. Sylvester and UPEACE collaborate with them on the documentation of ancestral and cultural practices. This project started with the creation of an MOU among the Indigenous Elders Group of Quitirrisí and the Department of Environment and Development at UPEACE under the guidance of Dr. Sylvester. This research is Huetar designed and led.

Professors working on this project: Dr. Olivia Sylvester (UPEACE)

Student Research Assistants: Claudia (RCPD 2023-24), MA Bernardo Serrano González (EDP 2022-23), Velia Sevilla (RCPD 2022-23), Lucia Duran (RCPD 2022-23), Keny Sibrán (RCPD 2022-23), Clara Ramin (EDP 2018-2019).

Project 2: Rethinking Agrarian Futures through Local Action (ReAL)

Description: A vast number of rural communities, dependent on agriculture, now find it difficult to sustain their livelihoods and ability to grow their own food. While government agencies have, more recently, pushed for sustainability in agriculture, their successes are often minimal. Even when policy and technical interventions are introduced to promote sustainable



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practices, they overlook the issues of equity, justice and social acceptability and do not adequately consider the ground realities. The ReAL project is being carried out in India and in Costa Rica and sets out to collaborate and learn from grassroots initiatives, co-creating channels of interaction to let their voices be heard in policy making spaces. To support grassroots initiatives in building capacities towards just and sustainable transformation in agriculture. The specific objectives are to :1) learn from and with local advocates and actors of grassroots initiatives as they unfold, 2) jointly identify the challenges and pitfalls of consolidating these initiatives and up-scaling these ideas, 3) help set up and mediate a dialogue in order to mobilise and enrol influential actors and decision-makers to act on the initiatives and ideas, and 4) to translate these experiences into open education material for partner institutions.

Professors working on this project: Dr. Olivia Sylvester (UPEACE), Dr. Gabriela Cuadrado-Quesada (IHE Delft Institute for Water Education, The Netherlands), Dr. Jyoti Nair (Ashoka Trust for Research in Ecology and the Environment, India).

Research Assistant: Licenciada Wendy Benavides, UPEACE

Funding: IHE Delft Institute for Water Education (The Netherlands), project number 112206 (2024-2027)

Research Line #3: Water Resources Management

Description: Nowhere in the world can one live without water. In 2010, The United Nations General Assembly explicitly recognized the Human Right to water and sanitation. With the adoption of the 2030 Agenda and Sustainable Development Goals in 2015, the global community committed to work towards SDG 6 - to ensure that people have access to clean water and adequate sanitation services worldwide by 2030. However, today we are halfway through the established timeline, and SDG 6 is alarmingly off track. 1 in 4 people lack safely managed drinking water in their homes and nearly half the world's population lacks safely managed sanitation. At the same time, our freshwater ecosystems, which are the main source for drinking water, are the most degraded ecosystems in the world. As most of the other SDGs are not achievable without adequate supplies of good quality freshwater, a better understanding of sustainable water resources management is needed. With this research line, we pay special attention to specific cases of water access



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and management in Costa Rica, as well as we invite students to research and write about their experience in other countries.

Project 1: Thirsty Spaces: The Slow Violence of Water Grabbing in Costa Rica

Description: This research project uses the frameworks of water grabbing and slow violence to examine water security in Costa Rica.

Professors working on this project: Dr. Olivia Sylvester (UPEACE), Dr. Corinne Schuster-Wallace (University of Saskatchewan, Canada), Dr. Bryan González (Escuela de la Tierra, Costa Rica).

Funding: Department of Environment & Development & University of Saskatchewan: Water Research Fund (2024-2026).

Project 2: The Role of the Rivers Rights as a tool for Peace Innovation and how it affects health and Environmental Peacebuilding in Latin America

Description: The idea that nature has rights is gaining momentum. More and more countries are passing laws that acknowledge animals, plants, and rivers legal personhood. While the demand for water access continues to rise, the world is facing a dramatic water and climate crisis. Water is increasingly being extracted and diverted to meet private needs, prioritizing the interests of the private sector over community water needs. The growing legal recognition of the inherent rights of rivers could foster the creation of a new legal paradigm and contribute to community health. However, there is still much uncertainty about the outcomes and impact that these novel legal developments have. Therefore, the purpose of this research is to analyze the role of how River Rights as a tool for peace innovation affect community health and environmental peacebuilding in Latin America and concentrates on the case of the Térraba river basin in the south of Costa Rica better understand how River Rights can contribute to national environmental peacebuilding.

Working on this project: PhD candidate Clara Ramin (UPEACE)

Funding: UPEACE Doctoral Scholarship (2023-Present)



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Research Line #4: Climate Security

Description: The research line on Climate Security includes a broad range of potential topics and themes related to the interlinkages between Climate Change and (In)security, including livelihood and food security, community, and ecological vulnerability and resilience, human mobility, and violent and nonviolent conflict.

Research Programme 1: Climate Security in Costa Rica

This research program will involve any project that deals with Climate Security in the Costa Rican context.

Project 1: “We can’t go any higher” - Analyzing livelihood resilience (and Climate Change Adaptation Strategies) in Costa Rica’s southwestern coffee regions

Description: This research aims to analyze the perceived and likely future impacts of climate change on coffee and coffee production and its linked potential livelihood challenges, systematizing any past and present adaptation and livelihood strategies and plans, identifying governance networks and mapping of actual and potential partnerships that are or could benefit the community around Altamira de Biolley. The main goals of this project are: 1) to identify potential risks to the livelihood and wellbeing of the community of Altamira due to climate change, 2) to systematize local governance initiatives and networks, 3) to identify potential new activities and approaches to increase livelihood security and resilience of the communities in the area.

Professors working on this project: Jan Breitling (UPEACE) and Tom Deligiannis (Wilfrid Laurier University).

Research Line #5: Land Use Change – Jan Breitling

Research Programme 1: Land Use Change in Costa Rica’s Coffee Growing Areas

Project 1: Transformation of coffee-growing landscapes in Costa Rica’s Biolley District



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Coffee cultivation in Costa Rica plays a key role in securing rural livelihoods, biodiversity conservation and sustainable development (Harvey et al, 2018). The literature on coffee growing landscape changes across Central America has identified biophysical changes throughout the region, as a direct result of fluctuations in coffee prices, climate change, plant pathogen and pest outbreaks, and overall changing socioeconomic conditions. More local studies are needed to gain clarity about whether these changes are happening, why they are happening and what potential consequences might be in terms of social, ecological, and economic terms.

This research project aims to address gap by focusing on the Biolley district in the south of Costa Rica, a region well known for small scale coffee production, community led cooperatives and farmers' associations. The researcher has been visiting this region regularly for the last 15 years and plans to work with members of two coffee producers' associations, ASOPROLA (Asociación de Productores La Amistad) and ASOMOBI (Asociación de Mujeres Asociadas de Biolley), as well as by professionals from the regional office of SINAC (Sistema Nacional de Areas de Conservación), the NGO "OSA-CONSERVATION", and the ICAFE (Instituto de Café).

Professors working on this project: Jan Breitling (UPEACE)

Student Research Assistants: Elizabeth Parker (EDP/NRSD 2025), Sophie Liebel (EDP/NRSD 2025), Carlye Goldman (EDP/NRSD 2025), Natalie Leonard (EDP/NRSD 2025)