

# Ramon Arturo. Gil-Egui

## Professional Summary

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## Professional Preparation

### Academic Background

Higher Education Teaching Diploma, Universidad Nacional Abierta (UNA) / Instituto Universitario de Tecnología de los Llanos (IUTLL), Venezuela, May 2004

B.S. Economics, School of Economics and Social Studies, Central University of Venezuela, July 1993

### Professional Appointments

Research Scientist Associate III, Bureau of Economic Geology, The University of Texas at Austin (September 2015-Present)

Energy Economist assisting in the design, implementation, and assessment of methodologies for energy pricing, cost analysis, and capital risks in the energy and rural development sectors. Performing research on different CO<sub>2</sub> injection scenarios for EOR, including economic sensitivity analysis on key input variables such as oil and CO<sub>2</sub> prices, capital expenditures, operational expenses, etc. Participating in the development of a methodology for Net Carbon Negative Oil (NCNO). Classification for EOR projects by integrating the geoengineering of EOR with the electricity demand of the operation. Assisting in the development of strategies conducive to lowering the carbon balance of EOR. Active work in publications, reports, and presentations to technical audiences.

#### Carbon Capture Utilization and Sequestration (CCUS) Projects:

CarbonSafe: Current 1.5-yr project funded by U.S. Department of Energy Carbon Storage Assurance Facility Enterprise (CarbonSAFE) initiative, seeks to help mitigate carbon dioxide (CO<sub>2</sub>) emissions from the burning of fossil fuels. Addressing key research gaps in the path toward the deployment of carbon capture and storage (CCS) technologies, including the development of commercial-scale (50+ million metric tons CO<sub>2</sub>) geologic storage sites for CO<sub>2</sub> from industrial sources. Phase I of the project will provide a feasibility study for a commercial-scale geological storage site. Objectives include formation of a CCS coordination team to address regulatory, legislative, technical, public policy, commercial, financial, and other issues specific to commercial scale deployment of the CO<sub>2</sub> storage projects. The projects is developing a plan encompassing technical requirements, as well as both economic feasibility and public acceptance of an eventual storage project near-offshore storage complex on the inner shelf of the Gulf of Mexico.

SECRAB: ongoing project to be ended late 2018. Economic analysis, apply findings from NCNO (Cranfield and SACROC cases) regionally.

Gulf of Mexico Regional Carbon Sequestration Partnership. Current 4-yr project funded by U.S. Department of Energy. Assisting to address the CO<sub>2</sub> transport and delivery options in the GoM

including assessments of: (a) existing infrastructure (e.g., pipelines, platforms, and wells) and how such infrastructure assessment may inform storage reservoir identification and evaluation; (b) logistical and regulatory obstacles to CO<sub>2</sub> transport and delivery to offshore targets; and (c) process and requirements of decommissioning and whether/how to re-purpose for large-scale offshore CO<sub>2</sub> storage in the GoM. Collaborating to document scenarios/processes to optimize field operations, reservoir response, and operations costs for efficient storage and monitoring of CO<sub>2</sub>.

Carbon Balance of CO<sub>2</sub>-EOR for NCNO Classification: Current 3-yr project funded by U.S. Department of Energy. Developing a clear, universal, repeatable methodology for making the determination of whether a CO<sub>2</sub>-EOR operation can be classified as Net Carbon Negative Oil (NCNO). Main focus on creating a model to analyze the relation between energy consumption, oil production, CO<sub>2</sub> injection, GHG emissions, and sequestration oriented to achieve NCNO classification for CO<sub>2</sub>-EOR operations and energy-efficiency recommendations.

Founder and General Director, Ser Sustentable C.A, Venezuela (July 2012-August 2015)  
Head of energy economics firm that provides consulting services on environmentally sustainable operations, energy management. and efficient use of renewable resources. Cost-effective mid- and long-term proposals for changes to and improvement on preventive and corrective maintenance program, system start-up procedures, and capital investment and expenditure plans. Results include 15% average increase on existing internal electric network capacity, and over 22% average savings in power consumption. Ongoing and completed projects to date include:

Waste management:

Integral Systems Solid Waste Management (based on ISO 14001 and national regulations): Project developed for the Acosta Municipality, Monagas state (area under special environmental administration by the Venezuelan national government). Population around 18,500 inhabitants. Review and redesign of solid waste management procedures, including adoption of a new waste classification system and primary recycling activities. (2014)

Energy efficiency:

Energy Management System (based on ISO 50001) for the Prof. Jose L. Perez Technical High School: Diagnostic and adjustment of electric supply system.  
Water Pumps Efficiency Diagnostic for Agua Azul Theme Park (water park, 3.000 visitors per day in high season) in Margarita, Nueva Esparta state, Venezuela.

Clean energy and emissions management:

Photovoltaic Pumping Systems for the Tamayo Foundation: Pumping and treatment of sewage, and collection of rainwater for greenhouse irrigation (2014).  
Bio-digesters for Pork Farms (PLUMROSE and AGROPORK), for the collection and use of methane gas for electric powering and cooking (2012).  
Photovoltaic power system for an INFOCENTRO at El Paují: Community library and Internet satellite connection at a small hamlet (population 450 inhabitants, including indigenous groups living in surrounding areas), located 1,500 km south of Caracas, Bolívar state, at the border of the Brazilian Amazon jungle.

Professor of Practice, Universidad Nacional Experimental Romulo Gallegos (UNERG), Venezuela (December 2006-August 2015)

Curricular and course design for the university's different majors in Economics, based on knowledge emerging from my professional practice and research. Development and supervision of applied community projects on infrastructure and utilities, covering project inception and design, fund sourcing, project development, and implementation, training, and operation management.

Applied research: Design and implementation (pilot phase) of a national plan for energy

management for public universities (2013); ongoing design, coordination, and assessment of the university's community service projects, with a focus on local development, and industrial and commercial entrepreneurship.

Courses designed and taught: Economics I (microeconomics), Economics II (macroeconomics - Curricular Coordinator), Economics and Politics of the Agricultural Sector (Curricular Coordinator), Community-Based Projects (service learning), Entrepreneurship: Economic Feasibility Analysis.

Thesis Supervision (Main Academic Advisor): Roldan, F., and Acua, N. (2014). MERCOSUR: Comparative Analysis of Its Agriculture Sector, 2010-2014 (B.S. Economics). Luzon, L. (2014). Socio-economic Impact Analysis of Handmade Furniture Shops in Magdalena, Aragua State, (B.S. Economics).

Personal Financial Consultant, Cinetica Financial Services, Venezuela -- USA (September 2006-August 2015)

Provide customized investment solutions involving international mutual funds, personal insurance, and individual assets protection.

Certified representative for: Investors Trust: code 507377, Best Meridian Insurance (BMI): code 10175, Manhattan Insurance Group: code 54RR107, Best Doctors: code BDDVZRR026

Adjunct Faculty, Universidad Central de Venezuela (UCV), School of Political and Administrative Sciences, Caracas, Venezuela (2005-2006)

Courses designed and taught: Political Economy IV, Special Topics Seminar: Agricultural Policy and Food Security in Venezuela (in line with paradigm of sustainable development)

Head of APROSIGUA's Operational and Financial Rescue Team, APROSIGUA (Association of Farmers in the Guarico River Irrigation System) - Calabozo, Venezuela (1999-2004)

Chaired and coordinated activities of a multidisciplinary team created to reactivate and expand the oldest trade association in the region. As a result of my leadership, the association achieved, after 15 years of stagnation, registration and/or readmission of 300 members in less than 2 years. Among other accomplishments of the team I chaired are access to new financing for the cultivation of more than 3,000 hectares, drilling of 90 deep wells for irrigation, and purchase 30 tractors and agricultural implements for association members

Lecturer, Instituto Universitario de Tecnologia de los Llanos (IUTLL), Venezuela (1998-2004)

Courses taught:

Economic Theory I (microeconomics),  
Agricultural Planning and Administration,  
Agricultural Projects

Founding Member and Independent Operator, Bolpriaven (Venezuelan Stock Market Exchange for Agricultural Commodities) - Caracas, Venezuela (1999-2002)

Transacted Certificates of Deposit, agricultural certificates, future options, rediscounts, and purchase/sale of positions in this private market exchange organization aimed at promoting transparency in price determination for the Venezuelan agricultural sector. Member of the Arbitrage Unit of the Chamber of Commerce in Caracas (Agriculture Team), dedicated to providing mediation in conflict resolution for actions related to operations of Bolpriaven.

Adjunct Faculty, Colegio Universitario de Administracion y Mercadeo (CUAM) -- Calabozo, Venezuela. (1997-1999)

Courses taught: Analysis and Management of Capital Investment

Energy Economics Consultant, Independent (1995-1997)

Provided analysis of costs and tariffs for several Venezuelan power-supply companies. Development of plans for the implementation of the Uniform Code of Accounts for Tariff Filing and Calculation for Venezuelan regional electric power companies (EDELCA, ELEBOL, CALIFE and CADAFAE) and their governmental regulatory body. Performed ad-hoc studies involving

costs control, consumer profiling, and pricing estimation for energy companies with variety of ownership regimes, supply chain, distribution networks, and demand structure. Adaptation of electric distribution companies' general accounting systems to the Venezuelan regulatory agencies' standardized accounting coding, based on functional cost centers, to comply with mandated operative efficiency and service quality levels. Scenario simulation and sensitivity analysis based on key variables (fixed assets, labor costs, energy and oil prices, inflation and exchange rates, demand scenarios, and others) aimed at determining and meeting profitability goals.

Researcher, Project Leader, and General Manager (successively), CONSORCIO CS, C.A. (ASINCRO and IMPROMAN, VBL) - Caracas, Venezuela (1987-1995)

Company specialized in consulting services in the area of pricing studies for public utilities, especially water and electric supply. Position involved service-costs analysis including the design and application of customized marginal and average cost methodologies, which resulted in cost allocation and tariff design for nationwide electricity generation and distribution companies in Venezuela. Developed economic viability analyses. Planned and supervised operative and administrative control of projects. Elaborated final reports for clients. Represented the firm at the National Advisory Team for the design and application of a standard pricing model for the electric power Industry in Venezuela, based on marginal-costs analysis (methodology promoted by the World Bank through its Program of Action for Macroeconomic Stabilization). Coordinated studies of costs and tariffs for subsidiary companies and end-users of the then-largest electric power distributor in Venezuela, CADAPE.

Junior Economist (paid internship), Lagoven (a subsidiary of the state-run oil company Petroleos de Venezuela [PDVSA]) - Caracas, Venezuela (1987)

Temporary staff member at Lagoven's Billing and Costs Control Office

## Theses

Marginal Costs Theory Applied to the Electric Power Sector: A Proposal for Venezuela, Central University of Venezuela, 1993.

## Continuing Education Courses Taken

Photovoltaic Systems: Basic and Advanced Equipment: Organized by Arca de NOE 2312 / Venezuelan Association of Engineers, Caracas, Venezuela, September 2015

Basics of Carbon Capture and Sequestration: Research and Experience in Carbon Sequestration Program, Southern Company, Birmingham, Alabama, August 6-20, 2015

Statistical Analysis with INFOSAT: National Institute for Agricultural Research, Calabozo, Guarico state, Venezuela, July 2005

Holistic Pedagogical Management in the Classroom: Endogenous Development: Instituto Universitario de Tecnología de los Llanos and Institute for Human Integral Development, Valle de la Pascua, Guarico state, Venezuela., May 2005

Planning, Design and Evaluation of Agricultural Projects: Instituto Universitario de Tecnología de los Llanos and Venezuelan Association of Agricultural Experts, Calabozo, Guarico state, Venezuela, March 2004

Management of Silos and Agricultural Storage Facilities: Venezuelan Agency for Commodities Exchange and Agricultural Inputs (BOLPRIAVEN) and the National Center for Research on Experimental Agricultural and Industrial Production (CIEPE), San Felipe, Yaracuy state, Venezuela, June 2002

Negotiation Theory and Tools: The Harvard Negotiation Model: CMI International and the Center for Quality and Productivity of Carabobo State, Valencia, Carabobo state, Venezuela, July 2001

International Agricultural Trade: Spanish Agency of Cooperation for International Development, and the Universidad Central de Venezuela's Institute of Agricultural Economics, Caracas,

Venezuela, September 2000

Brokerage of Agricultural Commodities Exchange: Venezuelan Agency for Commodities Exchange and Agricultural Inputs (BOLPRIAVEN), the Inter-American Institute for Cooperation on Agriculture (IICA), the Hemispheric Training System for Agricultural Development (SIHICA), and the CIARA Foundation, Caracas, Venezuela, February 1999

Analysis of Agricultural Networks and Food Policy in the Context of Globalization: Hemispheric Training System for Agricultural Development (SIHICA), the Inter-American Institute for Cooperation on Agriculture (IICA), and the CIARA Foundation, Caracas, Venezuela, September 1998

Financing of Utilities and Public Services: Electricity Company of Caracas (EDC) and the Institute of Advanced Studies in Administration and Management Studies (IESA), Caracas, Venezuela, October 1995

Government Reform and the Role of Public Services Administration: the Electricity Company of Caracas (EDC) and the Institute of Advanced Studies in Administration and Management Studies (IESA), Caracas, Venezuela, May 1995

Customs Law: Organized by the Venezuela Bank of Foreign Trade (BANCOEX) and the Venezuelan Ministry of Production and Commerce, Caracas, Venezuela, October 2001-Present

Incursion into New International Markets: Venezuela Bank of Foreign Trade (BANCOEX) and the Venezuelan Ministry of Production and Commerce, Caracas, Venezuela

## Areas of Expertise

### Areas of Expertise

Economics and Energy Consumption of CO<sub>2</sub>-EOR Surface Facilities

Economics of Energy Systems

Energy Efficiency

Higher Education

Project Management

Sustainable Solutions

## Service

### External Committees Participation

Deputy Representative of Venezuela at the Rice Advisory Committee, Committee created by the Council of Agriculture Ministers of the member countries of CAN (Decision No. 445), Comunidad Andina de Naciones (CAN) [Andean Community of Nations], Recommendations for the consolidation of the rice market in the Andean zone and for the improvement of the supply chain for that commodity in South America, Lima, Perú, October 1999

## Presentations

### Invited Presentations

The professional education of sustainability-conscious economists: Challenges and opportunities: presented to National Meeting of Economics Students (ENEE), presented at Panel on Sustainability and Climate Change Forum (Chair), San Juan de los Morros, Guárico state, Venezuela, September 2014.

Liability of cost structure for the subsidiaries of the National Electricity Company CADAPE: presented at Calculation of Energy Sales Price: CADAPE Charges to Its Subsidiaries, Regional Locations Workshops: Valencia, Carabobo state; Valera, Trujillo state; and Cumana, Sucre state, Venezuela, 1993-Present.

Characterization of electricity consumption by regions and types of clients: presented at Workshop: Calculation of the New Specification Fee for End-Users of the National Electricity Company (CADAFE), Caraballeda, Vargas state, Venezuela, 1991-Present.

Marginal electricity costs in context: Methodological review of the cases of Brazil, Chile and France: presented to Venezuelan Ministry of Energy and Mines (MEM), and by the Electricity of the Caroní Region Company (EDELCA), presented at Forum: Marginal Costs, Operating Costs, and System Expansion in the Venezuelan Electricity Sector, Caracas, Venezuela, 1990-Present.

## Presentations

CO<sub>2</sub>-EOR, an option for green oil? Approaching an NCNO classification (poster): presented at 5th Annual Bureau Research Symposium, Bureau of Economic Geology, Austin, Tex., September 2017.

CO<sub>2</sub>-EOR, an option for green oil? Approaching an NCNO classification: presented at Biannual Bureau of Economic Geology Sponsors Meeting, Bureau of Economic Geology, Houston, Tex., September 2017.

Matching environmental and economic performance of CCUS systems: an approach to a decision-making methodology for sustainable development: presented at Carbon Management Technology Conference (CMTC), Houston Tex., May 2017.

Carbon balance of CO<sub>2</sub>-EOR for NCNO classification (poster): presented to 4th Annual Bureau Research Symposium, Bureau of Economic Geology, Austin, Tex., September 2016.

Analysis of CO<sub>2</sub>-EOR operations: an approach to its main variables and uncertainty parameters: presented to GCCC Staff Weekly Seminars, Gulf Coast Carbon Center, Bureau of Economic Geology, Austin, Tex., May 2016.

A study of comparative advantages of irrigated rice production in Venezuela: presented at Latin American Economic Network of Rice Production Forum: Methodological Design, Cases and Prospects for the Region, Porto Alegre, Brazil, November 1999.

Conceptual implications of the theory of marginal cost applied to the electricity sector: presented to Venezuelan Association of Engineers and Venezuelan Association of Electrical and Mechanical Engineers, presented at Congress of Electricity Generation and Distribution, Porlamar, Nueva Esparta state, Venezuela, November 1988.

Study of the national market for the industrial subsector of oil valves: presented to School of Economics, Universidad Central de Venezuela, presented at Student Research Conference: Industrial Projects, Caracas, Venezuela, May 1985.

## Funding

### Research Support

Program Leader: Conceptual and Methodological Proposal for the Implementation of a Comprehensive Solid Waste Management Program, The Urban Development Office of the Acosta Municipality, Monagas state, Venezuela (August 2014-May 2015).

Chief Coordinator: Proposal for an Energy Management Plan for Public Universities in Venezuela (Competitively selected by the Dean of Research, Universidad Nacional Experimental Rómulo Gallegos [UNERG]), The Universidad Nacional Experimental Rómulo Gallegos (UNERG). San Juan de los Morros, Guarico state, Venezuela (March 2013-May 2015).

## Publications

### Peer Reviewed Journal Articles

Núñez-López, V., Gil-Egui, R., and Hosseini, S. A., 2019, Environmental and operational performance of CO<sub>2</sub>-EOR as a CCUS technology: a Cranfield example with dynamic LCA considerations: *Energies*, v. 12, no. 3, 15 p., <http://doi.org/10.3390/en12030448>, Article 448.

## Non Peer Reviewed Journal Articles

Gil-Egui, R., and Nuñez-López, V., 2019, A sustainable approach to decision-making in CCUS systems: 14th Greenhouse Gas Control Technologies Conference, GHGT-14, Proceedings, 21-26 October, Melbourne, Australia, 7 p., <http://doi.org/10.2139/ssrn.3380459>.

Nuñez-López, V., Gil-Egui, R., and Hosseini, S. A., 2019, CO<sub>2</sub>-EOR and GCS co-optimization with carbon lifecycle analysis considerations: 14th Greenhouse Gas Control Technologies Conference, GHGT-14, Proceedings, 21-26 October, Melbourne, Australia, 12 p., <http://doi.org/10.2139/ssrn.3366074>.

Nuñez-López, V., Gil-Egui, R., Gonzalez-Nicolas, A., and Hovorka, S. D., 2017, Carbon balance of CO<sub>2</sub>-EOR for NCNO classification: Energy Procedia, v. 114, p. 6597-6603, <http://doi.org/10.1016/j.egypro.2017.03.1803>.

## Conference Proceedings

Gil-Egui, R., and Nuñez-López, V., 2017, Matching environmental and economic performance of CCUS systems: an approach to a decision-making methodology for sustainable development, Carbon Management Technology Conference (CMTC), Houston, Tex.

Nuñez-López, V., Gil-Egui, R., Gonzalez, A., Hosseini, S. A., and Hovorka, S. D., 2016, Carbon balance of CO<sub>2</sub>-EOR for NCNO classification, 13th International Conference on Greenhouse Gas Control Technologies, GHGT-1314-18,, Lausanne, Switzerland.

## Contract Reports

Nicot, J.-P., Hosseini, S. A., Dashtian, H., Kamali, A., Romanak, K. D., Darvari, R., and Gil-Egui, R., 2019, Headspace gas monitoring to infer dissolved gas concentrations at the Glenhaven Site (QLD): prepared for Australian National Low Emissions Coal Research & Development (ANLEC R&D), Canberra, Australia, 94 p.

Nuñez-López, V., Gil-Egui, R., Hosseininoosheri, P., Hovorka, S. D., and Lake, L. W., 2019, Carbon life cycle analysis of CO<sub>2</sub>-EOR for Net Carbon Negative Oil (NCNO) classification: The University of Texas at Austin, Bureau of Economic Geology, Final Report prepared for U.S. DOE National Energy Technology Laboratory (DOE-NETL), under contract no. DE-FE0024433, 117 p.

Nuñez-López, V., Hosseini, S. A., and Gil-Egui, R., 2017, Interim report to DOE: Performance model for CO<sub>2</sub> storage system. As part of the project: Carbon Life Cycle Analysis of CO<sub>2</sub>-EOR for Net Carbon Negative Oil (NCNO) Classification: 60 p.

Nuñez-López, V., Hosseini, S. A., and Gil-Egui, R., 2017, Milestone report: Reservoir mass accounting methodology. As part of the project: Carbon Life Cycle Analysis of CO<sub>2</sub>-EOR for Net Carbon Negative Oil (NCNO) Classification: 18 p.

Nuñez-López, V., Gil-Egui, R., and Gonzalez, A., 2015, Identification of Critical Energy Intensive Components and Project Framework: Interim Report prepared for DOE-NETL, under contract no. DE-FE0024433, 12 p.

## Published Reports

Nuñez-López, V., Gil-Egui, R., Hosseininoosheri, P., Hovorka, S. D., and Lake, L. W., 2019, Carbon life cycle analysis of CO<sub>2</sub>-EOR for Net Carbon Negative Oil (NCNO) classification: U.S. DOE Office of Scientific and Technical Information (OSTI), DOE Contract DE-FE0024433, 117 p.

Mendez-Arocha, A., and Gil-Egui, R., 1990, Marginal costs in the Venezuelan electric power sector: A methodological framework proposed by the World Bank: 256 p.

## Published Abstracts

Gil-Egui, R., and Nuñez-López, V., 2018, A sustainable approach to decision-making in CCUS

systems (abs.): 14th International Conference on Greenhouse Gas Control Technologies, Melbourne, Australia.

Nuñez-López, V., Gil-Egui, R., and Hosseini, S. A., 2018, EOR and GCS co-optimization with carbon life-cycle analysis considerations (abs.): 14th International Conference on Greenhouse Gas Control Technologies, Melbourne, Australia.

Gil-Egui, R., and Nuñez-López, V., 2017, Matching environmental and economic performance of CCUS systems: an approach to a decision-making methodology for sustainable development, Carbon Management Technology Conference (CMTC) (abs.).

Nuñez-López, V., Gil-Egui, R., Gonzalez, A., and Hovorka, S. D., 2016, Carbon balance of CO<sub>2</sub>-EOR for NCNO classification (abs.): 13th International Conference on Greenhouse Gas Control Technologies, Lausanne, Switzerland.

Nuñez-López, V., Gil-Egui, R., and Hosseini, S. A., 2015, Validating CO<sub>2</sub>-EOR as a CCUS technology (abs.): Carbon Management Technology Conference: Sustainable and Economical CCUS Options, Sugar Land, TX.