

CURRICULUM VITAE

CLAUDIA PATRICIA PABON PEREIRA, PHD

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I am an enthusiastic academic and entrepreneur concerned about the current state of the biosphere and willing to walk the extra mile to make a real contribution to the well being of natural systems and humanity.

I have devoted my academic career to the study, design, implementation and evaluation of biological options for closing material cycles in urban and rural settings. Lately I am researching and teaching in the field of circular economy which is a direct application of my expertise. My expertise lies in the intersection between systems analysis, environmental technologies for efficient energy, nutrients, organic matter and water, and the policy and economic considerations regarding their application. I have more than ten publications in prestigious journals and chapters in academic books. I have taught and designed university study programs and courses at Master and Undergraduate level. Among the courses I have designed and taught are Circular Economy, Sustainability, Principles of Environmental Engineering, Environmental Technology, Environment and Society, Environmental Regulation, Sustainable Construction.

I am founder and director of Traasure, a company devoted to technological innovation, consultancy and education in circular economy, and technologies for residues and wastewater valorization with the aim of closing material cycles. As a consultant and practitioner, I am trainer and advisor in circular economy focusing on enabler factors, measuring frameworks and business models. I have also led trainings in Europe, Asia and Latin America in the design and evaluation of anaerobic digestion and composting facilities for solid waste, and on decentralized alternatives for sanitation. I have design and run environmental sciences laboratory and pilot facilities. I designed and academically directed the EcoParque de Penalolen, and in 2020 I was granted a patent for a compact biogas technology, one of the first urban domestic biodigesters in the world.

EDUCATION

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| 03.2018 -12.2019 | Diploma in Learning and Teaching for Higher Education
UAI Learning Center. Universidad Adolfo Ibáñez
Santiago de Chile, Chile |
| 10.2004 -04.2009 | Ph.D. in Environmental Sciences and Production Ecology and Resource Conservation
PhD thesis title: Anaerobic Digestion in Sustainable Biomass Chains
Wageningen University, The Netherlands
Sub-department of Environmental Technology and Sustainable Development and Food Security Group |
| 2002-2004 | M.Sc. in Environmental Sciences
MSc thesis title: Characterization and Optimization of Small Scale Farming Systems for Material Recovery and Efficient Management.
Wageningen University, The Netherlands
<i>Cum Laude diploma</i> |
| 1994-1999 | Bachelor degree in Industrial Engineering
Pontificia Universidad Javeriana. Bogotá, Colombia
Average score: 4.32 over 5.0 |

Prizes and Recognitions

- 12.2016 **National Prize on Environment. Category Sustainable Culture. Awarded to EcoParque Peñalolen UAI.** Otorgado por El Mercurio, la Fundación Recyclápolis y la Univ Católica reconociendo a empresas e instituciones comprometidas con el medio ambiente y el desarrollo sustentable.
- 12.2014 **Best Faculty Project 2014.** Universidad Adolfo Ibáñez . Faculty of Engineering and Sciences. For the creation of EcoParque Peñalolen UAI. A project aimed at education, research and community engagement around circular urban metabolism.
- 11.2008 **Storm van- der Chijs Stipend.** Finalist. Recognition given once a year to outstanding women Ph.D. researchers at Wageningen University.
- 02.2004 **Cum Laude Diploma**
Master in Environmental Sciences. Wageningen University - The Netherlands
- 07.2002 **MSc Scholarship BID**
Beneficiary of the Fellowship Program Japan-IADB from the Interamerican Development Bank to follow Master studies.
- 07.2002 Selected as **Scholar of COLFUTURO** to study a master's degree at Wageningen University.
- 08-1999 **Representing Javeriana University in the "First Colloquium of Cultural Exchange"**
Dissertation on: Latin-American women: Poverty and Violence.
Montreal, Canada.
- 11.1993 **Academic Recognition Luis Carlos Galán**
Best academic performance during secondary school for the graduated students in 1993.
La Quinta del Puente School. Bucaramanga, Colombia
- 11.1993 **Andrés Bello Award**
3th place at the National Level in the Colombian National Academic Tests 1993.
395 points over 400. Colombia

Professional Experience

- 10.2021-ongoing **University Lecturer in Circular Economy for the MBA, Master in Business Administration (CL)**
[Santa Maria University, Santiago de Chile](#)
Yearly participation as lecturer in the 20 hours MBA course in Circular Economy including methodological aspects of circular assessment using tools such as Material Flow Analysis, Multicriteria Analysis and Life Cycle Assessment.
- 01.01.2016 - on-going **University Lecturer in Environmental Technology for the Master in Urban Environmental Management (NL)**

Wageningen University, The Netherlands

Yearly participation as lecturer of the course Basic Technologies for Urban Environmental Management focusing on the understanding of environmental technologies for the urban setting including calculations on mass balances and products.

02. 2018 - on-going **University lecturer in Circular Economy for the Master of Science in Development and Culture (CO)**

Universidad Tecnológica de Bolívar. Institute of Studies in Development, Economy and Sustainability. Cartagena, Colombia

Yearly participation as lecturer of the course in Circular Economy focusing on the understanding and application of the principles of circular economy for the redesign of products, institutions and human dwellings for resource use minimization. The use of tools such as Material Flow Analysis, Multicriteria Analysis and Sustainability and circularity indicators is encouraged.

06.2022 - on-going **Senior Researcher in Circularuity Metrics**

Circle Economy The Netherlands

Metric advisor for THE CIRCULARITY GAP REPORT

<https://www.circularity-gap.world/2022>

10.2013 - on-going **CEO, Founder and Senior Consultant**

Traesure. Santiago de Chile, Chile

Company concerned with education, innovation and consultancy in the field of circular urban metabolism and appropriate technologies. Lead more than 20 consultancy projects, designed and taught sustainability courses and workshops at companies, schools and municipalities; installed and trained users of biogas facilities and projects or urban agriculture.

15.02.2011 to **Assistant Professor in Environmental and Energy Engineering**

31.07.2020 Universidad Adolfo Ibáñez. Facultad de Ingeniería y Ciencias. Santiago de Chile, Chile

In charge of designing and teaching 4th and 5th year Bachelor in Engineering students, as well as MSc students in the Master of Industrial Engineering and the Master in Water Technology and Management. Director of Energy and Environmental Engineering Program. Design and teaching of courses: Principles of Environmental Sciences and Engineering, Waste and Wastewater Treatment and Valorization, Environment and Society, Circular Economy, Sustainable Biofuels, Sustainability, Environmental Regulation, Sustainable Construction, and the Workshop in Energy and Environmental Engineering. As a professor I was also in charge of leading the design and implementation of the environmental engineering labs, carrying out academic research and guiding both Bachelor and Master students in their thesis and internship projects

10.2014 - 03.2007 **Academic Director at Eco Parque Peñalolén UAI**

Universidad Adolfo Ibáñez. Facultad de Ingeniería y Ciencias. Santiago de Chile, Chile

Design, project leadership and implementation of the project EcoParque Peñalolén UAI structuring and leading the applied research agenda of the project which main focus is on urban organic residues valorization, research using pilot facilities include two stage digestion of market residues, digestate posttreatment and valorization in compost and vermicompost beds, and , reuse of soil amendments in urban gardens.

03.2000 - 07.2002 **Coordinator of Urban Strategic Plan**

CORPLAN- Metropolitan Corporation for the Planning and Development of

the City of Bucaramanga.

Entity in charge of coordinating the efforts of the different agents of development at Bucaramanga (Colombia), towards its long term sustainable development. Tasks comprised the design and validation of the city's vision and main strategic projects involving relevant stakeholders following a participatory approach.

Academic Research

- 09.2020 - ongoing **Circular metabolism in South American cities.**
[Université de Montpellier](#)
PhD co-supervisor of student Alma Fleitas in collaboration with Prof. Tom Wassenaar at CIRAD (France)
06. 2019 - ongoing **Remind Project. Renewable Energies for Water treatment and Reuse in Mining Industries. EU Cordis Project. Horizon 2020.**
[Università della Calabria](#)
Researcher in the field of circular strategies for water management in the mining industries.
- 02.2012 - 07.2020 **Circular Urban Metabolism at EcoParque Peñalolen UAI**
[Universidad Adolfo Ibáñez. Engineering Faculty. Santiago de Chile](#)
<http://ingenieria.uai.cl/ecoparque>
Coordinating five lines of research aimed at closing cycles at urban level, directing several MSc thesis in topics such as Biomass upgrading into bioenergy and soil amendments, decentralized sanitation and reuse, urban gardens and circular metabolism research at different scales within Santiago
- 09.2018 - 12.2019 **Applied research in Life Cycle Assessment of Solar Technologies for AtaMoS-TeC Project (Atacama Module and System Technology Center)**
Researcher part of WP 8, focusing on the Life Cycle Assessment of different solar panel configurations for the North of Chile within the Atacama Desert. Santiago de Chile, Chile
- 10.2004-06.2009 **Academic research in Anaerobic Digestion in Sustainable Bioenergy Chains** *Wageningen University, Sub-department of Environmental Technology and the Sustainable Development and Food Security Group. Wageningen, The Netherlands*
PhD Thesis
The project involved a technical and a sustainability component. Within the technical one, a simple and reliable protocol for the assessment of the Biochemical Methane Potential of solid waste was standardized. Following the biogas potential of various crops and agro residues was investigated using the developed protocol. Laboratory research on continuous and batch (co) digestion of maize and cow manure was performed, digestate properties and hydrolysis rates being evaluated. In the second part of the research a sustainability assessment on the potential of anaerobic digestion to enhance sustainability of biomass cascades has been researched having cattle manure digestion in NL as case study as well as bioethanol production from cassava in Colombia. Finally, the role of anaerobic digestion in biomass chains in relation to current biofuel legislation in Colombia was studied considering sugarcane, cassava and oil palm as example crops.
- 10.2004-03.2007 **Scientific Researcher for EU Project Cropgen**
[Wageningen University- EU Project CROPGEN. www.cropgen.soton.ac.uk](#)
Responsible for research deliverables of two work packages within the EU Project CROPGEN –Renewable Energy from Crops and Agroresidues.
Tasks comprised the evaluation of biogas production potential from different

crops and residues including cattle manure and maize silage in combination with other substrates. in relation with its biochemical composition, which consequently involves the standardization of methods, the design and execution of laboratory tests and its further modeling and analysis. The research entailed interaction with other research partners in Italy, Spain, Austria, and England working at full scale facilities.

Curriculum Development

2019 to date	<p>Peer Reviewer of Master courses in Environmental Sciences. <i>Wageningen University, Sub-department of Environmental Technology. Wageningen, The Netherlands</i> Peer reviewer of the courses Basic Technologies for Urban Environmental Management and Energy, Water and Nutrient Cycles in the Built Environment and Principles of Environmental Sciences.</p>
15.02.2011-30.01.2014	<p>Director of Energy and Environmental Engineering Program <i>Universidad Adolfo Ibáñez. Facultad de Ingeniería y Ciencias. Santiago de Chile, Chile</i> In charge of coordinating the contents, teachers, schedule and program redesign of the Energy and Environmental Engineering undergraduate program. The task included the graduate student profile and the validation of the content and the related courses of Energy and Environment for the Industrial Engineering Program, with the involvement of the other professors in the group.</p>
01.07.2009-12.2010	<p>Curricular coordinator for the Urban Environmental Management Master Program <i>Wageningen University, Sub-department of Environmental Technology. Wageningen, The Netherlands</i> Involved in the restructuring of the Master Program in Urban Environmental Management from Wageningen University. The task consisted of coordinating the team of lecturers and researchers into reformulating the programme as well as developing new teaching material, guiding Master students and formulating research project proposals to strengthen the scientific component of the Master Program.</p>

Publications

- | | |
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| Peer reviewed | <ul style="list-style-type: none">▪ Villena Chamorro, MJ and Pabón-Pereira CP (Submitted June 2022). On the macroeconomic modeling of the circular economy. Submitted to Journal of Ecological Economics.▪ Crutchik D, Rodríguez-Valdecantos G, Bustos G, Bravo J, González B, Pabón-Pereira CP. (2020). Vermiproductivity, maturation and microbiological changes derived from the use of liquid anaerobic digestate during the vermicomposting of market waste. <i>Water Science and Technology</i>, 82(9), 1781-1794.▪ Pabón-Pereira, CP., Hamelers, H. V. M., Matilla, I., & van Lier, J. B. (2020). New Insights on the Estimation of the Anaerobic Biodegradability of Plant Material: Identifying Valuable Plants for Sustainable Energy Production. <i>Processes</i>, 8(7), 806 |
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- de Kraker, J., Kujawa-Roeleveld, K., Villena, MJ, & **Pabón-Pereira,CP.** (2019). Decentralized valorization of residual flows as an alternative to the traditional urban waste management system: The case of Peñalolén in Santiago de Chile. *Sustainability*, 11(22), 6206.
- **Pabón-Pereira, CP**, Slingerland, M., Hogervorst, S., van Lier, J., & Rabbinge, R. (2019). A sustainability assessment of bioethanol (EtOH) production: The case of cassava in Colombia. *Sustainability*, 11(14), 3968.
- Cataldo-Born, M; **Pabón-Pereira C.P**; Araya-Letelier, G. (2016). Obstacles and motivations for earth social housing in Chile; energy, environment, economic and codes implications. *Revista de la construcción*. 2016, vol.15, n.3, pp.17-26.
- **Pabón-Pereira, C.P.** de Vries, J. Zeeman, G. van Lier, J.B. (2014). Impact of crop-manure ratios and digestion time on the fertilizing characteristics of liquid and solid digestate during codigestion. *Journal of Environmental Technology*, 35 (19), 2427-2434.
- **Pabón-Pereira, C.P.** Castanares, G. and van Lier, J. B. (2012). An Oxitop(R) Protocol for screening plant material for its biochemical methane potential (BMP). *Water Science and Technology*. Vol 66 Issue 7 p 1416-1423.
- **Pabón Pereira CP**, Slingerland M, van Lier J, Rabbinge R. (2012). Anaerobic digestion as a key technology for biomass valorization: roles and contribution to the energy balance of biofuel chains. Chapter 7 of the *Biogas Handbook* . Wellinger, Murphy and Baxter (eds) pp 166-188.
- **Pabon-Pereira, C.P.** Zeeman, G. Zhao, J. Ekmekci, B, and van Lier, J.B. (2009) Implications of reactor type and conditions on first-order hydrolysis rate assessment of maize silage. *Water Science and Technology*. Volume 60. Issue 7. p.1829-1836
- **Pabón-Pereira, C.P.** Kujawa-Roeleveld, K. Mol, A.P. Zeeman, G. (2005). Characterization and optimization of small scale farming systems for material recovery and sustainable management. The case of Sunchochumo Community in Peruvian Andes. *Water Environment Management Series*. Volume 10. p 90-103.

Conference Proceedings

- **Pabón-Pereira, C.P.** Circular Economy:An Imperative Transition. Plenary speaker at the International Seminar Crecimiento, Desarrollo Sostenible: perspectivas en Iberoamérica. Cartagena, Colombia, 2022.
- **Pabón-Pereira, C.P.** Urban Circular Metabolism: Cities as living organisms. Plenary speaker at XXXIII Annual Conference of the Chilean Cellular Biology Society. Puerto Varas, Chile, 2019.
- Villena, M and **Pabón-Pereira, C.P.** The macroeconomics of the circular economy. *Circular Economy Seminar*. Università della Calabria. Faculty of Economics. 2019
- **Pabón-Pereira, C.P.** de Vries, J. Zeeman, G. van Lier, J.B. Impact of crop-manure ratios and digestion time on the fertilizing characteristics of liquid and solid digestate during codigestion. *Proceedings 9th Latin-American Workshop and Symposium in anaerobic digestion*. Eastern Island, Chile. October 19-23, 2008.
- **Pabón-Pereira, C.P.** Zeeman, G. Zhao, J. Ekmekci, B. and van Lier, J.B. Implications of reactor type and conditions on first-order hydrolysis rate assessment of maize silage. *Proceedings 5th International Symposium on Anaerobic Digestion of Solid Waste and Energy Crops*. Hammamet (Tunisia). May 25-28, 2008.
- **Pabón-Pereira, C.P.** van Lier, J.B, Sanders,W. Slingerland,M.A. Rabbinge, R. (2005). The role of anaerobic digestion in biomass energy chains.

Proceedings 4th International Symposium on Anaerobic Digestion of Solid Waste -ADSW. Copenhagen (Denmark), Aug 31th –Sept 2th 2005.

- **Pabón-Pereira, C.P.** van Lier, J.B.Sanders,W. Slingerland, M.A. Rabbinge, R. (2005). The Role of Anaerobic Digestion in Sugarcane Chains in Colombia. Proceedings VIII Latin American Workshop and Symposium on Anaerobic Digestion Punta del Este (Uruguay), October 2-5 2005.

Policy Documents

- **Pabón Pereira CP**, Villena M, ORyan, R. 2018. Circular Economy Strategy for Chile. Ministry of Sciences.Santiago de Chile. Chile
- Strategic Plan for the Metropolitan Area of Bucaramanga 2015. Corporación Metropolitana de Planeación y Desarrollo de Bucaramanga-CORPLAN. Bucaramanga, June de 2002.
- Revision and actualization of the Vision for the Metropolitan Area of Bucaramanga. Methodological design and elaboration of the document. Corporación Metropolitana de Planeación y Desarrollo de Bucaramanga-CORPLAN. Bucaramanga, March de 2002.

Patents

03. 2020. Compact biodigestion System for the treatment of DomesticOrganic Residues . SISTEMA BIODIGESTOR PARA TRATAMIENTO DE DESECHOS ORGÁNICOS DOMICILIARIOS, METODO. Check in: <https://ion.inapi.cl/Patente/ConsultaAvanzadaPatentes.aspx> with Patent number 201702617.

MSc Thesis Guidance

- Roos van Buuren 2021. Location allocation of organic solid waste. A case study in Santiago de Chile. Master Biobased Sciences. Operations Research and Logistics Group. Wageningen University.
- Laura Ramos. 2020. Towards a circular integrated waste management system in Bucaramanga, Colombia. MSc thesis in Urban Environmental Management. Wageningen University.
- Daniela Müller. 2020. Decentralized wastewater treatment alternatives in Villarrica lake. MSc thesis in International Land and Water Management. Wageningen University.
- Sya Hoeke. 2019. Redefining waste. Possibilities for improving the Urban Metabolism in Bucaramanga in a comparison study with Amsterdam. MSc in Metropolitan Analysis, Design & Engineering. Delft University and Wageningen University.
- Simone Van Langer 2018. Bachelor International Land and Water Management, Wageningen University. The effect of organic fertilizers from market residues on the growth of lettuce.
- Kaiva Folkmane 2018. MSc Urban Environmental Management, Wageningen University. Nutrient Recovery in Urban Contexts: Anaerobic Digestate From Market Waste and OFMSW as Input for Fertilizer Production in Santiago de Chile.
- Steffen Walk 2017. MSc. Hamburg University of Technology, Alemania. A comparison of psychrophilic two stage and single-stage anaerobic digestion for treating fruit and vegetable waste.
- Jelske de Kraker 2017. MSc Urban Environmental Managment . Wageningen University. Towards circular metabolism in Santiago de Chile: Possibilities for on-site resource recovery and organic waste reduction.

- Oscar Rabb 2017. Tesis de pregrado, Universidad Andrés Bello. Estudio del impacto del uso de digestado anaerobio y microorganismos eficientes en el proceso de compostaje de residuos de feria.
- Jiyao Zhao 2016. MSc Urban Environmental Management, Wageningen University. Analysis of the possible impact of residues in urban gardens in Peñalolén municipality in Santiago.
- Yuija Luo 2016. MSc Environmental Sciences, Wageningen University. Two-stage anaerobic digestion of market waste .
- Corral Nicolás 2014. MSc Engineering Sciences. Environmental Engineering track. UAI. Modelo para el diseño y evaluación del metabolismo circular de comunidades incorporando tecnologías limpias.
- Burgos Ramiro y Velásquez Claudio 2014. Bsc Industrial Engineering. UAI. Localización y evaluación técnica-económica de planta(s) de biodigestión anaerobia de residuos orgánicos de ferias libres en la Región Metropolitana.
- Grossi Alfredo 2014. MSc Engineering Sciences. Environmental Engineering track.UAI. Simulación térmica y detalles tecnológicos de diversas opciones de incorporación del biodigestor Compact2 en el hogar.
- Larrain Josefa 2014. MSc Engineering Sciences. Environmental Engineering track. UAI. Análisis de instrumentos de política pública para la gestión de residuos sólidos municipales en la Región Metropolitana de Chile.
- Cataldo Matías 2014. MSc Engineering Sciences. Environmental Engineering track. UAI. Diseño y Evaluación de una vivienda social en súper adobe como alternativa a la vivienda social convencional.
- Arriaga, Hermes. 2008.MSc Environmental Sciences. Environmental Technology and Environmental Economics. Wageningen University Economic benefits and costs of cassava based bioethanol production in Colombia.
- Ekmeci, Burcu. 2008. MSc Environmental Sciences. Environmental Technology and Environmental Systems Analysis. Wageningen University “Improving environmental performance of biogas production from human urine fertilized energy maize”.
- Hogevoorst, Sanna. 2007. MSc Environmental Sciences and MSc Development studies. Wageningen University. “The sustainability of cassava based bioethanol production in Colombia”.
- Zhao, Jiayi. 2007. MSc Environmental Sciences. Environmental Technology. Wageningen University. “Up-scaling of biogas digestion of plant material: From laboratory to full scale reactor”.
- De Vries, Jerke. 2007. MSc Environmental Sciences. Environmental Technology. Wageningen University. “Closing material cycles through reincorporation of digested crop material into the farming environment: agricultural and environmental implications”.

Consulting and Training Projects

04.2021- ongoing

Circular Economy Training Program for Compañía Minera Doña Inés de Collahuasi

Design and execution of a transversal training program composed of four components aimed at embedding circular economy concepts and skills within the company and its suppliers. The program consisted of three executive lectures, an e-learning program for all employees, an e-learning program for the company suppliers, a 12 session workshop series for employees families and an on-going monthly publication on circular economy covering applied aspects in regulation, energy, water, workforce among other specific topics. *Work carried*

out for Collahuasi Mining Company, Santiago de Chile, Chile

- 08.2020 **Urban Agriculture for Lo Barnechea Municipality through Participatory Cartography**
Through an interactive methodology practical knowledge transfer on urban agriculture is facilitated to citizens in Lo Barnechea municipality starting for interaction among different societal groups and for involvement through the joint identification of suitable sites for building communal urban agriculture initiatives. *Work carried out for Municipalidad de Lo Barnechea, Chile*
- 07.2018-12.2019 **Domestic anaerobic digestion of organic residues in Municipalidad de Independencia**
Implementation of three compact urban domestic anaerobic digester in Municipalidad de Independencia, aimed to educate and train citizens in the valorization of their own residues into biogas.
Work carried out for Municipalidad de Independencia, Santiago de Chile, Chile
- 06.2019 **Circular Economy Training for the Chilean Economic Development Agency-CORFO**
Course targeted towards analysts coming from different areas, and aimed to provide an overview of the topic, main concepts and tools.
Work carried out for UAI, June 2019, Santiago de Chile, Chile
- 12.2018-07.2019 **Design and execution of pilot anaerobic digester for Municipalidad de Independencia**
A pilot anaerobic digester for the treatment of organic residues from public markets has been designed , implemented including the appliances and installation of biogas treatment and reuse for cooking and electricity generation.
Work carried out for Municipalidad de Independencia, Santiago de Chile, Chile
- 06.2017-07.2018 **Design and execution of an Advanced Training of Trainers course for the Biogas Sector in Chile**
Advanced 40 hours course targeted towards trainers of future biogas operators, the course is executed in collaboration with the German International Biogas Group, IBBK and Universidad Adolfo Ibañez
- 06.2017-2.2018 **Urban Circular Metabolism Agenda for the city of Bucaramanga , Colombia**
Consultancy assignment oriented towards defining a Circular Metabolism Agenda for the City of Bucaramanga, it comprised several seminars introducing the concept of circular economy and circular metabolism, along with meeting main stakeholders concerned with solid waste management in the city of Bucaramanga and carrying out an outline on potentials and risks related to this endeavor.
Work carried out for Bucaramanga Municipality. Bucaramanga, Colombia, December 2017.
- 06.2017-07.2017 **Design and execution of Intensive Training of Trainers in Anaerobic Digestion of the Organic Fraction of Municipal Solid Waste for Colombian academics**
Advanced course targeted towards teachers from the Faculty of Engineering of Escuela Colombiana de Ingeniería (ECI) covering biological and design aspects of anaerobic digestion technology including case study analysis, for a total of 28 hours course plus excursion.
Work carried out for ECI, July 2017, Bogotá, Colombia
- 02.2016-09.2017 **Product development and patenting of a compact domestic digester for urban applications: Compact2.**

Project carried in collaboration between Traesure and Universidad Adolfo Ibanez to finalize the development of a household anaerobic digester occupying only 0,5 m² space being useful for urban applications. As a result of the project a patentable design was developed as well as the business model for the product.

- 06.2015-08.2015 **Circular Metabolism Strategies for Chile**
Definition of a baseline strategy for implementing the circular economy concept as part of a public and private sector initiative in Chile with an emphasis on the role of the water and energy sector. Consultancy work carried out for Lead to Change.
- 09.2015-10.2015 **Anaerobic digestion of market residues in Santiago de Chile**
Biogas production from market waste and digestate enhancement and reuse. Technological and market evaluation of anaerobic digestion alternatives for the production of biogas and digestate in the Metropolitan Region of Santiago de Chile. Task performed for Metrogas
- 06.2015-07.2015 **Anaerobic digestion of domestic residues in Bolivar department in Colombia**
Evaluation of the residues availability and biogas potential of four municipalities within María La Baja municipality nearby Cartagena, Colombia. Task performed for Surtigás in collaboration with Universidad Tecnológica de Bolívar.
- 04.2014-06.2014 **State of the art in composting technology in Chile**
Evaluation of case studies and state of the art in legislation, market development, social practices and institutional arrangements of composting technology in Chile including municipal and industrial experiences. Trainer in biomass upgrading technologies for representatives of all Chilean municipalities. Task performed for Tetrattech, USA.
- 09.2013-06.2014 **Design and sustainability assessment of Likandes park**
Evaluation of possible scenarios for minimizing water consumption and fossil energy use in Likandes, an educational park to be located in Cajon del Maipo in the outskirts of Santiago de Chile. Involved as well in the development of educational initiatives related to environmental component of the project for Fundación Caserta, Santiago de Chile, Chile.
- 06.2013-03.2014 **Process evaluation and improvement of the anaerobic digestion of sewage sludge after thermal pretreatment in Mapocho -Trebala Wastewater treatment Plant in Santiago de Chile**
Performance evaluation and on the possibilities for enhancing anaerobic degradability of thermally pretreated sewage sludge in Mapocho-Trebala wastewater treatment plant of Aguas Andinas, main wastewater treatment plant in Santiago de Chile.
- 07.2010-12.2010 **Sustainable water reuse in the city of the future**
Design of a training program in sustainable sanitation. The training program was thereafter performed in the City of Muñoz, Philippines and in Lima, Peru. The contents served as reference for structuring the online training module in wastewater treatment within the international online training program in "Water Management for the City of the Future" lead by ICLLEI (www.iclei.org) for the SWITCH Project. Task performed for Lettinga Associates Foundation, Wageningen, The Netherlands

01.2007-04.2007

Expert in factory engineering for the European project entitled « Feasibility study to define the program for “Support to research in the ACP Sugar Cane Sector”

In charge of providing the necessary technical knowledge on sugar cane production, transformation and environmental impacts, required for the selection of feasible, relevant, sustainable projects for the sugar Sector in ACP countries. The consultancy entailed field visits to Mauritius and South Africa. Management for Development Foundation Ede, The Netherlands.