

Part A. PERSONAL INFORMATION

CV date	2025
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First and Family name	M ^a Carmen Ruiz Puente		
Social Security, Passport, ID number		Age	
Researcher numbers	Researcher ID	K-4161-2015	
	Orcid code	0000-0001-5854-9694	

A.1. Current position

Name of University/Institution	UNIVERSIDAD DE CANTABRIA		
Department	Transportes y Tecnología de Proyectos y Procesos E.T.S. Ingenieros Industriales y Telecomunicación		
Address and Country	Av. Los Castros, s/n		
Phone number	34942201789	E-mail	ruizpm@unican.es
Current position	Full Professor	From	05/2023
Key words	Project Engineering and Management, Industrial Sustainability, Systemic Eco-innovation, Socio-technical Systems and Complexity		

A.2. Education

PhD	University	Year
Industrial Engineering	Universidad de Cantabria	1998

Positions

Professor (Associate). University of Cantabria (Santander, Spain), 2002-2023

Department of Transport and Technology of Projects and Processes

Teaching and research on Industrial Ecology, Sustainable Design in Industrial Systems, Project Engineering and Project Management

Academic Visitor. University of Cambridge (Cambridge, UK), Oc'13-Jan'14

Centre for Industrial Sustainability - Institute for Manufacturing - Department of Engineering

Assistant Professor. University of Cantabria (Santander, Spain), 1997-2002

Department of Chemical Engineering

Teaching and research on Applied Thermodynamics and Kinetics, Operational Calculus in Chemical Process Engineering, Environmental Pollution and Industrial Waste Management

Head of the Department of Environment and Risk. GREYCO, S.A. (Cantabria, Spain), 1999

Visiting Research Scientist. University of Cincinnati (Cincinnati, USA), Sep'97-Mar'98

Department of Civil and Environmental Engineering

Grant of Spanish Ministry for Education and Science

Visiting PhD Student. INCAPE Instituto Nacional de Catálisis y Petroquímica (Santa Fe, Argentina), Jun'95-Nov'95

INTERCAMPUS Grant - Agencia Española de Cooperación Iberoamericana (AECI)

Production Engineer Apprenticeship. REPSOL Química Santander (Cantabria, Spain), 1992

Publications, last decade**Journals and books**

Pigazo, F., **Ruiz-Puente, C.** (2024) Organizational theoretical approaches to sustainability in a complex environment. DYNA. Management Journal 2013, 12(1), 1-11.

Pigazo, F., **Ruiz-Puente, C.** (2024) Analysis of the dynamic relationships between industrial and environmental factors and unemployment rate. An econometric approach. DYNA. Energía y Sostenibilidad, 13(1), 1-13.

Muyulema, J.C., **Ruiz-Puente, C.** (2022) Framework proposal for the design of lean circular production systems based on case studies. DYNA. Ingeniería e Industria, 97, 515-521.

Ruiz-Puente, C. (2021) Proposal of a conceptual model to represent urban-industrial systems from the analysis of existing worldwide experiences. Sustainability, 13, 9292.

Jato-Espino, D., **Ruiz-Puente, C.** (2021) Bringing facilitated industrial symbiosis and game theory together to strengthen waste exchange in industrial parks. Science of the Total Environment, 771, 145400.

Ruiz-Puente, C., Jato-Espino, D. (2020) Systemic analysis of the contributions of co-located industrial symbiosis to achieve sustainable development in an industrial park in Northern Spain. Sustainability, 12, 5802.

Jato-Espino, D., **Ruiz-Puente, C.** (2020) Fostering circular economy through the analysis of existing open access Industrial Symbiosis Databases. Sustainability, 12, 952.

- Álvarez, R., **Ruiz-Puente, C.** (2017) Development of the tool SymbioSyS to support the transition towards a circular economy based on Industrial Symbiosis strategies. *Journal of Waste and Biomass Valorisation*, 8, 1521-1530.
- Ruiz-Puente, C.**, Romero Arozamena, E., Evans, S. (2015) Industrial symbiosis opportunities for small and medium sized enterprises: preliminary study in the Besaya region (Cantabria, Northern Spain). *Journal of Cleaner Production*. Vol. 87, 357-374.
- W. Ashton, L. Baas, H. Baumann, J. Bi, F. Boons, R. Branson, S. Brullot, I. Costa, C. Davis, P. Deutz, D. Gibbs, M. Eklund, L. Hu, R. Isenmann, G. Korevaar, L. Liu, P. Lowitt, Y. Lei, D. Lyons, G. Massard, P. McManus, O.E. Olayide, J. Patchell, M. Rice, E. Romero, **Ruiz-Puente, C.**, M. Shenoy, W. Spekkink, B. van Hoof, V. Verguts, H. Wang, Q. Wang, B. Zhang (2015) International perspectives on industrial ecology. pp. 115-143, Edward Elgar (UK).
- Ruiz-Puente, C.** (2014) Planning for urban growth and sustainable industrial development. pp. 115-135. K. M. Reynolds et al. (eds.), *Making Transparent Environmental Management Decisions*, Environmental Science and Engineering, Springer-Verlag Berlin Heidelberg (ISBN 978-3-64231999-0). New York.
- Romero, E., **Ruiz-Puente, C.** (2014) Proposal of an agent-based analytical model to convert industrial areas in industrial eco-systems. *Science of the Total Environment*. Vol. 468-469, 394-405.
- Romero, E., **Ruiz-Puente, C.** (2013) Framework for applying a complex adaptive system approach to model the operation of eco-industrial parks. *Journal of Industrial Ecology*. Vol. 17, Issue 5, 731741.
- Romero, E., **Ruiz-Puente, C.**, Díez, A. (2013) Influential aspects modeling for the development of sustainable strategies in industrial areas. *Selected Proceedings from the 16th International Congress on Project Engineering*, pp. 85-93, Asociación Española de Ingeniería de Proyectos -AEIPRO-.

Conferences

- Ruiz-Puente, C.** (2022) Innovación en materia de economía circular: estrategias y nuevos modelos de negocio. Comité Técnico CT-41 Fundación CONAMA. 16º Congreso Nacional de Medioambiente (Conama 2022). Madrid, España.
- Ruiz-Puente, C.** (2020) La sostenibilidad en las áreas industriales. I Foro Nacional Online de Áreas Empresariales y Polígonos Industriales. DIBEX. Zaragoza, España.
- Ruiz-Puente, C.** (2020) Simbiosis industrial en la comarca del Besaya (Cantabria): enfoque, lecciones aprendidas e implicaciones. Fundación CONAMA. Selección de proyecto en la Convocatoria de Proyectos de Conama 2020 para el Comité Técnico CT-45 sobre simbiosis industrial. 15º Congreso Nacional de Medioambiente (Conama 2020). Madrid, España.
- Ruiz-Puente, C.** (2020) Simbiosis Industrial. Comité Técnico CT-45 Fundación CONAMA. 15º Congreso Nacional de Medioambiente (Conama 2020). Madrid, España.
- Ruiz-Puente, C.** (2020) Innovación en Economía Circular. Comité Técnico CT-51 Fundación CONAMA. 15º Congreso Nacional de Medioambiente (Conama 2020). Madrid, España.
- Ruiz-Puente, C.** (2019) Tools to help the industrial system move towards a circular economy. 11th International Conference on Industrial Ecology. Cartago, Costa Rica.
- Ruiz-Puente, C.** (2018) Desarrollo del paquete de economía circular en materia de residuos. Sesión Técnica ST-23 Fundación CONAMA. 14º Congreso Nacional de Medioambiente (Conama 2018). Madrid, España.
- Ruiz-Puente, C.** (2018) Innovación en proyectos con visión de economía circular. Comité Técnico GT-17 Fundación CONAMA. 14º Congreso Nacional de Medioambiente (Conama 2018). Madrid, España.
- Ruiz-Puente, C.** and Bayona, E. (2017) Modelling of an industrial symbiosis network as a supply chain. 5th International Conference on Sustainable Solid Waste Management. Athens, Greece.
- Ruiz-Puente, C.** (2017) Experiment-Plan-Do: Herramientas para apoyar la transformación hacia una economía circular. Fundación CONAMA, Décima edición Conama Local. Valencia, España.
- R. Álvarez, **Ruiz-Puente, C.** (2015) Development of the tool SymbioSyS to support the transition towards a circular economy based on Industrial Symbiosis strategies. WASCON 2015 - Resource efficiency in construction. 9th International Conference on the Environmental and Technical Implications of Construction with Alternative Materials. Santander, España.
- Ruiz-Puente, C.** (2015) Chair of the plenary session *Using industrial symbiosis as a tool address resource criticality: a UK construction sector perspective*. WASCON 2015 - Resource efficiency in construction. 9th International Conference on the Environmental and Technical Implications of Construction with Alternative Materials. Santander, España.
- Romero, E. and **Ruiz-Puente, C.** (2015) Could the history of Kalundborg have been foreseen? Agent-based simulation tool to experiment with industrial symbiosis models. 2015 ISIE Conference. Surrey, UK, 7-11 July.
- Álvarez, R. and **Ruiz-Puente, C.** (2015) SymbioSyS: A platform-web to facilitate and promote resource efficiency in industrial and urban systems. 2015 ISIE Conference. Surrey, UK.
- Ruiz-Puente, C.** (2014) Ecosistemas industriales y urbanos para el Horizonte 2050. 12º Congreso Nacional del Medio Ambiente (Conama 2014). Madrid, España.
- Ruiz-Puente, C.** and Romero, E. (2014) Integración sostenible de áreas industriales y urbanas mediante modelado basado en agentes. Congreso Latinoamericano REHABEND 2014. Santander, España.
- Ruiz-Puente, C.** and Romero, E. (2014) Planificación y diseño de eco-sistemas industriales como parte de la solución en la regeneración urbana. Congreso Latinoamericano REHABEND 2014. Santander, España.
- Romero, E., **Ruiz-Puente, C.**, Álvarez, R., Bayona, E. (2013) Eco-industrial areas modeling proposal. International Conference on Resource Efficiency in Interorganizational Networks - Reseff 2013. Göttingen, Alemania.

Bayona, E., **Ruiz-Puente, C.**, Romero, E., Álvarez, R. (2013) Design of synergy network of industrial symbiosis between large companies of an industrial complex. International Conference on Resource Efficiency in Interorganizational Networks - Reseff 2013. Göttingen, Alemania.

Álvarez, R., **Ruiz-Puente, C.**, Romero, E., Bayona, E. (2013) Detection of industrial symbiosis' synergies and environmental management among SMEs of industrial areas based on spatial analysis tools of the information. International Conference on Resource Efficiency in Interorganizational Networks – Reseff 2013. Göttingen, Alemania.

Ruiz-Puente, C. (2013) Waste management network for small and medium-sized enterprises located in industrial parks in the Besaya region (Northern Spain). 7th International Society for industrial Ecology Biennial Conference. ISIE 2013. Ulsan, Corea del Sur.

Boons, F., Spekkink, W., Jiao, W., Isenmann, R., Baas, L., Eklund, M., Baumann, H., Brulot, S., Deutz, P., Gibbs, D., Massard, G., Romero, E., **Ruiz-Puente, C.**, Verguts, V., Davis, C., Korevaar, G., Brings, N., Costa, I. (2013) Mapping the diversity of industrial symbiosis: comparative analysis of European public and private efforts to develop symbiotic networks. International Conference on Industrial Ecology. ISIE 2013. Ulsan, Corea del Sur.

Workshops

CWA 17354:2018 E Industrial symbiosis: core elements and implementation. CEN - Comité Europeo de Normalización. Comité científico. Bruselas, Bélgica, 2018-2019.

Industry 4.0 and Sustainability. EPSRC Centre for Industrial Sustainability - Annual Cohort Retreat 2017. University of Cambridge (UK). Losehill, Manchester, UK, 2017.

Pop-up session 'Capturing sustainable value'. EPSRC Centre for Industrial Sustainability - 5th Annual Conference and Exhibition. University of Cambridge (UK). Cambridge, UK, 2016.

Industrial sustainability. EPSRC Centre for Industrial Sustainability - Annual Cohort Retreat 2016. University of Cambridge (UK). Losehill, Manchester, UK, 2016.

PYMES y simbiosis industrial para crear sistemas industriales sostenibles. Agenda Estratégica y Marco de Referencia para la Cooperación con CIDES -Centro Internacional para el Desarrollo Sostenible-. Encuentro Iberoamericano sobre Desarrollo Sostenible. Madrid, España, 2016.

Manufacturing in 2025. EPSRC Centre for Industrial Sustainability - Annual Cohort Retreat 2015. University of Cambridge (UK). Losehill, Manchester, UK, 2015.

Estrategias de simbiosis industrial para la eficiencia y gestión innovadora de los recursos. Cámara Oficial de Comercio, Industria y Navegación de Cantabria (Cantabria). Santander, España, 2014.

Systemic approach on eco-innovation. European Research Area Network on Eco-innovation ERA Net ECO-INNOVERA. Copenhagen, Denmark, 2014.

Networking to boost sustainable industrial systems. EPSRC Centre for Industrial Sustainability- Third Annual Conference – 2014. University of Cambridge (UK). Cambridge, UK, 2014.

Recent past, present and near future of industrial sustainability. 1st Industrial Sustainability Roundtable. University of Cambridge (UK). Oxon Hoath, UK, 2014.

Research projects, last decade

CIRCLEAN Network: European network of businesses and SMEs for industrial symbiosis. European Commission's DG GROW. 2019-2022. Participant.

Modelado y Simulación de Sistemas Industriales Circulares. Plan Nacional RETOS. 2018-2021. PI: M.C. Ruiz.

SymbioSyS tool adaptation and use for an industrial symbiosis project in Israel subject to the Ministry of Economics and Industry public tender N° 5/18. 2019-2020. PI: M.C. Ruiz.

FORESEE: Future Proofing Strategies for Resilient Transport Networks against Extreme Events. H2020 – Europa. 01/09/2019-31/08/2022. Participant.

COST Action CA 16121 - From sharing to caring: Examining socio-technical aspects of the collaborative economy. European Union - Horizon H2020 programme. 2017-2021. Participant.

RAGTIME: Ragtime: Risk Based Approaches for Asset Integrity Multimodal Transport Infrastructure Management. H2020 – Europa. 01/09/2016-31/08/2019. Participant.

Acuerdo entre TECNALIA y el grupo de I+D+I Ingeniería y Gestión de Proyectos (INGEPRO) de la Universidad de Cantabria para el uso en prueba del programa informático SymbioSyS. Tecnalia-Universidad de Cantabria. 09.10.17/08.01.18. PI: M.C. Ruiz.

ICT COST Action IC1406. High-Performance Modelling and Simulation for Big Data Applications (CHiPSet). WG4 HPC-enabled Modelling for Socio-Economical and Physical Sciences. 2015-2018. Participant.

BBC2.0: Bringing circular economy to tyres. Climate-KIC-Universidad Cantabria. 15/05/2017-07/06/2017. PI: M.C. Ruiz

BE CIRCLE. Climate-KIC-Universidad Cantabria. 08/10/16-08/11/2016. PI: M.C. Ruiz.

Innovation insights for Climate-KIC's Sustainable Production Systems Theme. Climate-KIC-Universidad Cantabria. 05/12/16-31/12/2016. PI: M.C. Ruiz.

Análisis del riesgo y propuesta de gestión en la licitación de contratación pública. Agencia de Certificación en Innovación Española-Universidad de Cantabria. 01/06/15-30/06/2015. PI: M.C. Ruiz.

Bases para el desarrollo de proyectos de simbiosis industrial en el municipio de Torrelavega. Ayuntamiento de Torrelavega (Cantabria). Universidad de Cantabria. 01.10.10/31.12.13. PI: M.C. Ruiz.

Patents

Javier Balbás, José Ramón Aranda, M^a Carmen Ruiz. Método para optimizar el beneficio económico de un parque eólico, planificando su futura repotenciación y maximizando la reutilización de infraestructuras. 2014 Universidad de Cantabria.

Andrés Payán, Ana María, Coz Fernández, Alberto, Irabien Gullas, José Angel, Ruiz Puente, Carmen, Viguri Fuente, Javier. Procedimiento de inertización de lodos que contienen carga contaminante orgánica e inorgánica. 2004 Universidad de Cantabria.

Doctoral projects

(In process) Modelo de gobernanza de proyectos públicos bajo condiciones de riesgos naturales y artificiales.

(In process) Influencia de los modelos organizacionales en la sostenibilidad industrial.

(In process) Diseño de infraestructuras verdes como sistemas complejos adaptativos.

(In process) Estrategias de economía circular para una industria avícola sostenible.

(2019) Industrial Symbiosis for Sustainable Urban Development: Understanding SME resource efficiency performance and implementing good practice in business.

(2019) Detección de sinergias de simbiosis industrial y gestión medioambiental entre pymes de áreas industriales mediante herramientas de análisis espacial de la información.

(2016) Study and correlation between the design of a wind farm and its future repowering.

(2014) Design and modelling of sustainable industrial parks based on industrial ecology and complex systems methods.

(2009) Development of a model to locate sustainable industrial areas and contribution to the operation design.

Committees and membership

Centro para el Desarrollo Tecnológico y la Innovación. Expert of the DNSH requirement for projects. 2025 – Present.

Agencia Nacional de Evaluación de la Calidad. Expert of the VERIFICA program for renewal of national certification for Doctorate Programs. 2024 – Present.

Consejo Asesor de Cambio Climático y Medioambiente de Cantabria. Delegate of the Official College of Industrial Engineers of Cantabria. 2022 – Present.

Fundación CONAMA. Member of the Technical Committees working on Innovation, Industrial Symbiosis and Circular Economy for the preparation of the National Environment Congress that is held biannually. 2018 – 2023.

Collaborative knowledge networks. European Research Area Network on Eco-innovation, Industrial Symbiosis in Europe, Centre for Industrial Sustainability, CircLean, International Society for Industrial Ecology. From 2007.

Instituto de Ingeniería de España. Member of the University, Training and Business Committee of the Institute of Engineering of Spain. 2017 – 2020.

Agencia Estatal de Investigación. Evaluator of research projects of the State Research Agency and international entities. 2005 – Present.

Agencia Nacional de Evaluación de la Calidad. Expert of the ACADEMIA program for national certification for access to university teaching bodies. 2015 – 2020.

Agencia Andaluza del Conocimiento. Academic Member of the Engineering and Architecture Commission in the verification program of official Bachelor's and Master's degrees, of the Directorate of Evaluation and Accreditation of the Andalusian Knowledge Agency. 2009 – 2013.

Awards

Best Final Project of Master's Degree in Industrial Engineering awarded by Colegio Oficial de Ingenieros Industriales de Cantabria (España). "Diseño de un proceso de desulfuración de gases en una central termoeléctrica", Santander (1994).