

Lorenzo Rinaldi

Curriculum Vitae (last update: 13rd February 2026)

1. PERSONAL INFORMATION

Name, Surname: Lorenzo, Rinaldi
Born: 02-03-1994, Tradate (VA), Italy
E-mail: lorenzo.rinaldi@polimi.it
lorenzo.rinaldi@enextgen.it
Languages: Italian (mother tongue)
English (Certified C1 level, Cambridge ESOL FCE Grade A)

2. EDUCATION

Nov2020 – Jun2024 **PhD in Energy and Nuclear Science and Technology**
Department of Energy, Politecnico di Milano, Italy
Thesis title: *Development of an integrated modelling framework to assess environmental, energy security and economic implications of global energy transition scenarios*
Supervisor: Prof. Matteo Vincenzo Rocco

Sep2016 - Apr2019 **Master of Science in Energy Engineering**
Politecnico di Milano, score 104/110
Thesis title: *Multi-Year Capacity-Expansion Modelling of Hybrid Microgrid within a Comprehensive Design Framework (with application to Chile)*
Supervisor: Prof. Emanuela Colombo

Sep2013 – Sep2016 **Bachelor of Science in Energy Engineering**
Politecnico di Milano, score 98/110

3. BRIEF PROFESSIONAL BIOGRAPHY

I am a Post-Doctoral researcher at the Sustainable Energy Systems Analysis and Modelling (SESAM) group at the Department of Energy, Politecnico di Milano.

My research is concentrated on multi-scale energy systems modelling for energy transition scenario analysis, with a particular focus on economic and energy models soft-link integration. The underlying rationale behind the need for such integration is explained by the fact that most energy scenarios, traced by authoritative institutions and research studies, often miss in capturing the details of the economic framework within which the energy sector is included, neglecting perturbations on related industrial sectors as well as critical raw materials supply chain and availability.

I have a deep expertise in Python programming language and I am an active contributor on various open-source projects.

In December 2022, I co-founded eNextGen, a start-up company, spin-off of Politecnico di Milano, aiming at providing firms and private consumers with a new comprehensive vision about sustainability. eNextGen offers tools and products for footprinting analysis, environmental and economic impact assessment of goods and services in both static- and scenario-based perspectives.

4. PROFESSIONAL EXPERIENCE

4.1. CURRENT POSITIONS

- Jun2024 - Ongoing **Post-Doctoral Researcher**
Department of Energy, Politecnico di Milano, Italy
Field: *Integrated energy and economic modelling; analysis and impact evaluation of energy transition scenarios.*
- Dec2022 – Ongoing **R&D Manager and Co-founder**
eNextGen, Via Principe Eugenio 9, 20155, Milano, Italy.
eNextGen is a start-up company, spin-off of Politecnico di Milano

4.2. PREVIOUS POSITIONS

- Nov2020 – Jun2024 **Doctoral Researcher**
Department of Energy, Politecnico di Milano, Italy
- May2019 – Oct2020 **Junior Research Fellow**
Department of Energy, Politecnico di Milano, Via Lambruschini 4 – 20156, Milano, Italy
Research title: *“Valutazione di impatto di scenari di sviluppo in contesti africani. Sviluppo di un modello integrato di valutazione”*

5. PROJECTS

RESEARCH PROJECTS

Period	Position	Project description
Jan 2025 – Ongoing	Post-Doctoral Researcher, POLIMI	<p>Title: ENhanced understanding of Trade Impacts on Climate, industries, and the Environment (ENTICE)</p> <p>Type: Horizon Europe I Grant n. 101003656</p> <p>Commissioner: European Commission</p> <p>Partners: E3M, CMCC, WI, REFORM, VUA, HOL, eNextGen, UoS, UniVer, SEURECO, ICCS, ORDECSYS, Politecnico di Milano, Purdue, ZEW, UU</p>

"I authorize the processing of my personal data in accordance with GDPR 2016/679 of April 27, 2016 (European Regulation concerning the protection of individuals with regard to the processing of personal data)."

		<p>Topic: Enhancing models and data to analyze trade and climate interactions, focusing on emissions, environmental impacts, and sustainability.</p> <p>Role: Project management for POLIMI, analyst and modeler (WP2, WP3, WP4)</p> <p>Links: Website</p>
Mar 2024 – Jun 2025	Doctoral Researcher, POLIMI	<p>Title: Fundamental decarbonisation through sufficiency by lifestyle changes (FULFILL)</p> <p>Type: Horizon 2020 I Grant n. 101003656</p> <p>Commissioner: European Commission</p> <p>Partners: Fraunhofer, Wuppertal Institut, EURAC, Jacques Delors Institute, International Network for Sustainable Energy – Europe, Politecnico di Milano, nègaWatt Association, Zala briviba</p> <p>Topic: Exploring the contribution of lifestyle changes and citizen engagement in decarbonising Europe and fulfilling the goals of the Paris Agreement</p> <p>Role: Analyst and modeler (in WP6 specifically)</p> <p>Links: Website</p>
Oct 2023 - Nov 2023	Doctoral Researcher, POLIMI	<p>Title: AMBassadors for sustainable transition (AMBITION)</p> <p>Type: Capacity Building</p> <p>Funder: Erasmus+ Programme</p> <p>Partners: Politecnico di Milano, RWTH Aachen University, TU Delft, Chalmers University of Technology, Strathmore University, Kwame Nkrumah University of Science & Technology, ETH Zurich, Green Growth Africa</p> <p>Topic: Joint Honours Programme for PhD students, towards the sustainable transition in Europe and Africa</p> <p>Role: Lecturer in an Innovation School</p> <p>Links: Website</p>
Oct 2023 - Feb 2026	Post-Doctoral Researcher, POLIMI (prev. Doctoral Researcher, POLIMI)	<p>Title: Multi-sectoral Integrated Modeling platform for planning national energy transition pathways (MIMO)</p> <p>Type: Progetto di Ricerca di Interesse Nazionale I Grant n. 2022ZHR8WC</p> <p>Funder: Ministero dell'Università e Ricerca (MUR)</p> <p>Partners: Politecnico di Milano, Università degli Studi di Firenze, Università di Macerata, IRPET</p> <p>Topic: Formulation of a soft/hard-linked energy-economy model to design and assess the impact of future energy transition pathways for the Italian context</p> <p>Role: Analyst and modeller, data curation and scenario definition</p>
Sep 2022 - Aug 2025	Post-Doctoral Researcher, POLIMI	<p>Title: Expanding Integrated Assessment Modelling: Comprehensive and Comprehensible Science for Sustainable, Co-Created Climate Action (IAM COMPACT)</p> <p>Type : Horizon Europe I Grant n. 101056306</p>

	(prev. Doctoral Researcher, POLIMI)	<p>Funder : European Commission</p> <p>Partners: Addis Ababa University, Aalto Korkeakoulusaatio SR, Aalborg Universitet, Asociacion BC3 Basque Centre for Climate Change, Bruegel, Fundacion CARTIF, Cicero Senter for Klimaforskning Stiftelse, E3 Modelling AE, Indian Institute of Management, Imperial College London, Kyiv Economics Institute, KTH, <u>National Technical University of Athens</u>, Politecnico di Milano, Rajarata University of Sri Lanka, Tsinghua University, Technical University of Mombasa, University of Piraeus Research Center, University System of Maryland, Universidad De Valladolid, Wuppertal Institute</p> <p>Topic: Multi-scale modelling platforms integration for policy support in EU transition</p> <p>Role: Project management for POLIMI, model and linking strategies development, capacity building (WP4, WP5, WP6)</p> <p>Links: Website</p>
Mar 2020 – Dec 2021	Doctoral Researcher, POLIMI (prev. Research Fellow, POLIMI)	<p>Title: FIVE of Olympics' Flag</p> <p>Type: Polisocial Award 2019</p> <p>Funder: Politecnico di Milano</p> <p>Partners: Comune di Milano, Città Metropolitana di Milano, Urban@IT, OMERO, Provincia Autonoma di Trento</p> <p>Topic: Ex-ante socio-economic and environmental impact evaluation of Olympics event by means of an integrated tool based on system dynamics and input-output models</p> <p>Role: Model conceptualization, deliverables drafting, creating networks</p>
Mar 2019 – Dec 2023	Doctoral Researcher, POLIMI (prev. Research Fellow, POLIMI)	<p>Title: Piano per il Monitoraggio dell'iniziativa ILUMINA: accesso all'energia e empowerment delle donne</p> <p>Type: AID 11387</p> <p>Funder: Agenzia Italiana di Cooperazione e Sviluppo</p> <p>Partners: Politecnico di Milano, AVSI, COSV</p> <p>Topic: Monitoring and evaluation of rural electrification program in Mozambique</p> <p>Role: Project management, surveys preparation, data analysis, logistics, deliverables drafting</p>
Mar 2019 – May 2020	Research Fellow, POLIMI	<p>Title: Boa_Ma_Nha Maputo!</p> <p>Type: Polisocial Award 2018</p> <p>Funder: Politecnico di Milano</p> <p>Partners: Politecnico di Milano, Eduardo Mondlane University (Maputo), AICS Maputo</p> <p>Topic: Context and scenario analysis for development of Maputo region, Mozambique</p> <p>Role: Model conceptualization, deliverables drafting, creating networks</p> <p>Links: Website</p>

FUNDED AND CONSULTANCY PROJECTS

Details of these projects are not disclosable.

Period	Position	Project commissioner Engagement role
Apr 2024 - Ongoing	Analyst, eNextGen	Commissioner: Energia Corrente Role: Analyst, data curation
Mar 2024 – May 2024	Post-Doctoral Researcher, POLIMI	Commissioner: Edison S.P.A Role: Model development and implementation, data collection, scenarios definition, deliverables drafting
Oct 2023 – May 2024	Analyst, eNextGen	Commissioner: Ambro Logistica, RPierre Digital Role: Analyst, developer, data curation
Oct 2022 – May 2023	Doctoral Researcher, POLIMI	Commissioner: Edison S.P.A Role: Model development and implementation, data collection, scenarios definition, deliverables drafting
Jun 2021 – Jun 2022	Doctoral Researcher, POLIMI	Commissioner: Ernst & Young (EY) Partners: IRPET, HEAS AG/SA Role: Model development and operation, data collection, scenarios definition, deliverables drafting
Mar 2019 – Nov 2021	Doctoral Researcher, POLIMI (prev. Research Fellow, POLIMI)	Commissioner: Enel Foundation Partners: SDA Bocconi School of Management

6. PUBLICATIONS LAST UPDATE: 15TH DECEMBER 2025

METRICS

Scopus	15 documents	121 citations	h-index: 5
Web of Science	10 documents	97 citations	h-index: 5
Google Scholar	33 documents	205 citations	h-index: 7

JOURNAL ARTICLES (ON SCOPUS)

N.	Document	N. citations
J11	Keppo I, Al Khourdjie A, Gardumi F, Holtz G, Nikas A, Xexakis G, Ferreras-Alonso N, Fragkos P, Frilingou N, Ghadaksaz H, Hawkes A, Mateo A, Mittal S, Parrado-Hernando G, Peters G, Rinaldi L , Rocco MV, Sognaes I, van de Ven DJ, Zamanipour B, <i>Model linking for low-carbon transitions: Technical and conceptual challenges and best practices</i> , Renewable and Sustainable Energy Reviews, 2026, 10.1016/j.rser.2025.116384 (open access)	0
J10	Shendrikova D, Rinaldi L , Colombo E, <i>Measuring value compatibility in European Union energy diplomacy: Conceptual framework and application to</i>	0

"I authorize the processing of my personal data in accordance with GDPR 2016/679 of April 27, 2016 (European Regulation concerning the protection of individuals with regard to the processing of personal data)."

	<i>natural gas sector</i> , Energy Research and Social Science, 2025, 10.1016/j.erss.2025.104254 (open access)	
J9	Golinucci N, Rocco MV, Prina MG, Beltrami F, Rinaldi L , Schau EM, Sparber W, <i>The role of sufficiency measures in a decarbonizing Europe</i> , Ecological Economics, 2025, 10.1016/j.ecolecon.2025.108645	0
J8	Stevanato N, Fioriti D, Ferrucci T, Belloni L, Rinaldi L , Poli D, Colombo E, <i>Data-driven analysis for the characterization of household appliance ownership and use in Sub-Saharan Africa</i> , Renewable and Sustainable Energy Reviews, 2025, 10.1016/j.rser.2025.115396 (open access)	1
J7	Rinaldi L , Ghezzi D, Colombo E, Rocco MV, <i>Assessing environmental and market implications of steel decarbonisation strategies: a hybrid input-output model for the European Union</i> , Environmental Research Letters, 2024, 10.1088/1748-9326/ad5bf1 (open access)	5
J6	Rinaldi L , Golinucci N, Guerrieri G, Sanvito FD, Rocco MV, Colombo E, <i>When are battery electric vehicles economically convenient? A sensitivity analysis based on multi-carrier residential energy system renovation modelling in Italy</i> , Energy Reports, 2024, 10.1016/j.egyr.2024.01.025 , (open access)	3
J5	Nikas A, Frilingou N, Heussaff C, Fragkos P, Mittal S, Sampedro J, Giarola S, Sasse JP, Rinaldi L , Doukas H, Gambhir A, Giannousakis A, Golinucci N, Koasidis K, Rocco MV, Trutnevte E, Xexakis G, Zachmann G, Zisarou E, Colombo E, Hawkes A, Yarlagaadda B, Binsted M, Iyer G, van de Ven DJ, <i>Three different directions in which the European Union could replace Russian natural gas</i> , Energy, 2024, 10.1016/j.energy.2024.130254 , (open access)	14
J4	Tahavori MA, Golinucci N, Rinaldi L , Rocco MV, Colombo E, <i>MARIO: a versatile and user-friendly software for building Input-Output models</i> , Journal of Open Research Software, 2023, 10.5334/jors.473 , (open access)	4
J3	Rinaldi L , Rocco M.V, Colombo E, <i>Assessing Critical Materials Demand in Global Energy Transition Scenarios Based on the Dynamic Extraction and Recycling Input-Output Framework (Dynerio)</i> , Resources Conservation & Recycling, 2023, 10.1016/j.resconrec.2023.106900 , (open access)	21
J2	Stevanato N, Rinaldi L , Pistolesse S, Balderrama S, Quoilin S, Colombo E, <i>Modelling of a Village-Scale Multi-Energy System for the Integrated Supply of Electrical and Thermal Energy</i> , Applied Sciences, 2020, 10.3390/app10217445 , (open access)	15
J1	Stevanato N, Lombardi F, Guidicini G, Rinaldi L , Balderrama S, Pavicevic M, Quoilin S, Colombo E, <i>Long-term sizing of rural microgrids: accounting for load evolution through multi-step investment plan and stochastic optimization</i> , Energy for Sustainable Development, 2020, 10.1016/j.esd.2020.07.002	49

CONFERENCE PAPERS (ON SCOPUS)

N.	Document	N. citations
C3	Cortez PM, Vinciguerra A, Rinaldi L , Rocco MV, Sanchez B, <i>Blue-Green Sustainability Framework for Building Assessment based Multifunctional Analysis of Regions through Input-Output (MARIO)</i> , in proceedings of the CIB	0

	Conferences, Purdue University, USA, May 19-23, 2025 Available at CIB-Conferences Proceedings: 10.7771/3067-4883.1144 (open access)	
C2	Vinciguerra A, Rinaldi L , Rocco MV, Colombo E, <i>The Supply and Use Framework Can Be Exploited for Comparing Technologies Serving Similar Needs: The Case of the Italian Heavy-Duty Road Sector</i> , in proceedings of the 9th AIGE/IIETA International Conference and 19 th AIGE Conference, Caserta, Italy, Jun 3-5, 2024. Available at International Journal of Transport Development and Integration 10.18280/ijtdi.080408 (open access)	0
C1	Conte M, Rinaldi L , Tonini F, Fumagalli T, Lorenzin G, Piras P, Sommariva G, Rocco MV, Colombo E, <i>Investigating the economic and environmental impacts of a technological shift towards hydrogen-based solutions for steel manufacture in high-renewable electricity mix scenarios for Italy</i> , in proceedings of the 7th AIGE/IIETA International Conference and 16 th AIGE Conference, Parma, Italy, Jun 8-9, 2022. Available at IOP Conference Series: Earth and Environmental Science 10.1088/1755-1315/1106/1/012008 (open access)	8

BOOKS CHAPTERS (ON SCOPUS)

N.	Document	N. citations
B2	Rinaldi L , Chiarelli DD, <i>Energy-food challenges and future trends in Mozambique and in the Maputo Province</i> , in <i>Territorial Development and Water-Energy-Food Nexus in the Global South</i> , Springer, Research for Development, pp 119-131, 2022, 10.1007/978-3-030-96538-9_8	1
B1	Rocco M.V, Rinaldi L , <i>Energy: An essential asset for the development of African continent</i> , in <i>Territorial Development and Water-Energy-Food Nexus in the Global South</i> , Springer, Research for Development, pp 179-184, 2022, 10.1007/978-3-030-96538-9_12	0

SOFTWARE AND DATABASE

N.	Document
S3	Rocco MV, Rinaldi L , Baiocco V, Ghezzi D, CVXLAB, https://github.com/cvxlab/cvxlab
S2	Rinaldi L , Ghezzi D, <i>Exiobase HYBRID I Green steel version</i> , https://doi.org/10.5281/zenodo.15754536
S1	Tahavori M.A, Rinaldi L , Golinucci N, <i>Multi-functional Analysis of Regions through Input-Output (MARIO)</i> , 10.5281/zenodo.5879382 , https://github.com/it-is-me-mario/MARIO

7. PARTICIPATION TO SCIENTIFIC CONFERENCES

Dates	Venue	Event	Contribution(s)
2025, May 19-23	Purdue University, USA	CIB World Building Congress	Paper author

2024, Oct 24-26	Urbino, Italy	65 ^a RSA – Società Italiana di Economia	Presenter in special session
2024, Jul 1-5	Santiago, Chile	30 th International Input-Output Association Conference	Presenter in special session & lecturer at Conference School
2024, Jun 3-5	Caserta, Italy	9 th AIGE/IIETA International Conference	Paper author
2023, Sep 14-16	Genova, Italy	XXXVI Congresso della Società Italiana di Scienza Politica	Paper author
2023, Jun 25-30	Alghero, Italy	29 th International Input-Output Association Conference	Presenter in special session
2022, Aug 28- Sep 2	Langkawi, Malaysia	28 th International Input-Output Association Conference	Presenter in parallel session
2022, Jul 13-15	Online	Scipy Conference 2022	Poster author
2022, Jun 8-9	Parma, Italy	7 th AIGE/IIETA International Conference	Paper author
2021, Sep 22-24	Reggio Calabria, Italy	X Convegno dell'Associazione Rete Italiana LCA	Paper author
2021, Jun 21	Online	International Industrial Ecology Day 2021	Presenter
2020, Jan 15-17	Berlin, Germany	10 th OPENMOD Workshop	Poster author
2019, Sep 1-6	Dubrovnik, Croatia	14 th SDEWES Conference	Paper author

8. TEACHING AND TRAINING ACTIVITY

COURSES AND WORKSHOPS

List of all courses and workshops I have been engaged as lecturer, teaching assistant or others.

Period	Position	Course description
Feb 2025	Lecturer (as Post-Doctoral Researcher, POLIMI)	Title: Input-Output-based Life-Cycle Assessment with MARIO Type: High-Level Summer School for Energy Experts Commissioner: Climate Compatible Growth, EMP-LAC Venue: Universidad de la Matanza, Buenos Aires, Argentina Link: Website
Sep 2024 – Feb 2025	Lecturer	Title: Energy Accounting and Impact Assessment Methods Type: Master of Science in Energy Engineering Lecturer: Prof. Matteo Vincenzo Rocco

	(as Post-Doctoral Researcher, POLIMI)	Venue: Politecnico di Milano, Campus Bovisa, Milan, Italy
May 2024	Trainer, eNextGen	Title: LCA and Sustainability assessment Type: Training course for companies Commissioner: Tecno Habitat Topics: Theory of Supply-and-Use framework and Life-cycle assessment LCA database theory and management Venue: Milan, Italy
Jan 2024 – Feb 2024	Lecturer (as Doctoral Researcher, POLIMI)	Title: Input-Output-based Life-Cycle Assessment with MARIO Type: High-Level Summer School for Energy Experts Commissioner: Climate Compatible Growth, EMP-LAC Venue: Universidade Federal Fluminense, Niteroi, Brasil Link: Website
Nov 2023 - Ongoing	Lecturer (as Doctoral Researcher, POLIMI)	Title: Input-output analysis and modelling with MARIO Type: MOOC Link: www.open.edu
Nov 2023	Lecturer (as Doctoral Researcher, POLIMI)	Title: <i>Integrated Energy and cross-sectorial modelling for the sustainable transition</i> Course: Sustainable Innovation School for the Ambition Erasmus+ Project Venue: Strathmore University, Nairobi, Kenya
Sep 2023 – Dec 2023	Tutor and project supervisor (as Doctoral Researcher, POLIMI)	Title: Energy Accounting and Impact Assessment Methods Type: Master of Science in Energy Engineering Lecturer: Prof. Matteo Vincenzo Rocco Venue: Politecnico di Milano, Campus Bovisa, Milan, Italy
Aug 2023 – Sep 2023	Trainer (as Doctoral Researcher, POLIMI)	Title: <i>IAM COMPACT workshop on Modelling tools for sustainable development</i> Type: Capacity building Venue: Mombasa, Kenya
Jul 2023	Lecturer (as Doctoral Researcher, POLIMI)	Title: Input-Output-based Life-Cycle Assessment with MARIO Type: High-Level Summer School for Energy Expert Commissioner: Climate Compatible Growth, ICTP Joint Summer School Venue: ICTP, Trieste, Italy Link: Website
Jan 2023 - Ongoing	Lecturer (as Doctoral Researcher, POLIMI)	Title: Measuring the impact of the Energy Transition Type: MOOC Link: www.pok.polimi.it
Nov 2022	Trainer	Title: Workshop on surveying and energy access Type: Capacity building

	(as Doctoral Researcher, POLIMI)	Venue: COSV headquarters, Mocuba, Zambezia, Mozambique
Sep 2022 – Dec 2022	Tutor and project supervisor (as Doctoral Researcher, POLIMI)	Title: Energy Accounting and Impact Assessment Methods Type: Master of Science in Energy Engineering Lecturer: Prof. Matteo Vincenzo Rocco Venue: Politecnico di Milano, Campus Bovisa, Milan, Italy
Jul 2022	Trainer (as Doctoral Researcher, POLIMI)	Title: Workshop on surveying and energy access Type: Capacity building Venue: AVSI headquarters, Pemba, Cabo Delgado, Mozambique
Apr 2021	Lecturer (as Doctoral Researcher, POLIMI)	Title: <i>Energy Outlook - Production, Consumption and Geopolitics</i> Course: Master ENEL – Smart Grid Venue: Politecnico di Milano, Campus Bovisa, Milan, Italy
Feb 2021 – Jul 2021	Tutor and project supervisor (as Doctoral Researcher, POLIMI)	Title: Advanced Thermodynamics and Thermoconomics Type: Master of Science in Energy Engineering Lecturer: Prof. Emanuela Colombo Venue: Politecnico di Milano, Campus Bovisa, Milan, Italy
Sep 2020 – Dec 2020	Tutor and project supervisor (as Research Fellow, POLIMI)	Title: Engineering and Cooperation for Development Type: Master of Science in Energy Engineering Lecturer: Prof. Emanuela Colombo Venue: Politecnico di Milano, Campus Bovisa, Milan, Italy
Sep 2019 – Dec 2019	Tutor and project supervisor (as Research Fellow, POLIMI)	Title: Engineering and Cooperation for Development Type: Master of Science in Energy Engineering Lecturer: Prof. Emanuela Colombo Venue: Politecnico di Milano, Campus Bovisa, Milan, Italy