

# Lorenzo Rinaldi

Curriculum Vitae – Scientific and Professional activities

(last update: November 2020)



## 1. PERSONAL INFORMATION

Surname, Name: **Lorenzo, Rinaldi**  
Born: **02-03-1994, Tradate (VA), Italy**  
Home address: **Via Damiano Chiesa 23C, Carbonate (CO), Italy**  
Mobile: **+39 340 7315283**  
e-mail: [lorenzo.rinaldi@polimi.it](mailto:lorenzo.rinaldi@polimi.it)

## 2. EDUCATION

Sep 2016 - Apr 2019 **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  
The Thesis was developed in the context of the Project: *A model-based framework for evaluating Performance and Impact of sustainable energy strategies: synergy and matches with the New Multi-Tier Framework (funded by Enel Foundation)*

Sep 2013 – Sep 2016 **Bachelor of Science in Energy Engineering**  
Politecnico di Milano, score 98/110

May 2018 – Jan 2019 **150 hours collaboration**  
Department of Energy, Politecnico di Milano, Via Lambruschini 4 – 20156, Milano, Italy  
Activities: design and development of Sustainable Energy Systems Analysis and Modelling (SESAM) research group website ([sesam.polimi.it](http://sesam.polimi.it))

## 3. ACADEMIC AND PROFESSIONAL CAREER

### 3.1. CURRENT POSITION

Nov 2020 – Ongoing **Doctoral Researcher**  
Department of Energy, Politecnico di Milano, Via Lambruschini 4 – 20156, Milano, Italy  
Research field: *Energy and Input-Output modelling; analysis and impact evaluation of scenarios for clean power and transport transition.*  
Activities: PhD Candidate in the Sustainable Energy Systems Analysis and Modelling (SESAM) research group.

### 3.2. PREVIOUS POSITIONS

May 2019 – Oct 2020      **Research fellow** (*Assegnista di ricerca*)  
 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*”  
 Activities: Research Fellow in the Sustainable Energy Systems Analysis and Modelling (SESAM) research group.  
 Main activities include Research Activities, support to Academic Activities as well as participation in Public and Private funded Projects below described.

## 4. SUPPORT TO ACADEMIC ACTIVITY

### 4.1. MSc COURSES

A.Y. 2020 – 2021      **Lecture support for project work supervision**  
 Course: “Engineering and Cooperation for Development”  
 Prof. Emanuela Colombo, SSD: ING/IND-10  
 MSc in Energy engineering, Politecnico di Milano

A.Y. 2019 – 2020      **Tutor for project work supervision (*Bando tutorato* - 8 hours)**  
 Course: “Engineering and Cooperation for Development”  
 Prof. Emanuela Colombo, SSD: ING/IND-10  
 MSc in Energy engineering, Politecnico di Milano

A.Y. 2018 – 2019      **Lecture support for project work supervision**  
 Course: “Advanced Thermodynamics and Thermoconomics”  
 Prof. Emanuela Colombo, SSD: ING/IND-10  
 MSc in Energy engineering, Politecnico di Milano

### 4.2. SEMINARS

Sep 25<sup>th</sup>, 2019      **The efficient resource management in developing agro-urban areas (Politecnico di Milano)**  
 Lecture (1 hour)  
 Master course: “Design for Development. Architecture, Urban Planning and Heritage in the Global South”  
 Dipartimento di Architettura e Studi Urbani – Politecnico di Milano

### 4.3. THESES SUPERVISION

Sep 2019 – Present      Co-supervision of 5 (3 ongoing) MSc theses in Energy Engineering  
*(Students' names are underlined, supervisor is in last position, co-supervisors are the other names)*

- Title not yet specified, Amadio M., Soares C.A., Rinaldi L., Colombo E., 2020-21
- Title not yet specified, Montanari G., Stevanato, Rinaldi L., Colombo E., 2020-21
- Title not yet specified, El Yaziji I., Rinaldi L., Rocco M.V., 2020-21
- *Comprehensive impact assessment of road transport sector transition scenarios: application to Italy*, Di Leo G., Rinaldi L., Rocco M.V., 2018-19

- *Modelling with Multi-Year Optimization of Off-Grid System for Rural Electrification. The Case Of "Guli" Village in Sudan, Omer Y., Guidicini G., Rinaldi L., Colombo E., 2018-19*

## 5. RESEARCH ACTIVITY

### 5.1. RESEARCH ACTIVITY DESCRIPTION

The candidate serves as a PhD Candidate at the Sustainable Energy Systems Analysis and Modelling (SESAM) group at the Department of Energy, Politecnico di Milano, from November 2020.

The 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.

As a continuation of his MSc thesis, the candidate is also active on rural electrification pathways analysis, specifically through minigrad design and planning . Particular attention on this topic is given to development and design of optimal techno-economic solutions for remote contexts, accounting for time-evolving load consumption and allowing for capacity expansion of the installed solution, in order to better capture development dynamics.

### 5.2. PARTICIPATION AS JUNIOR RESEARCHER IN FUNDED PROJECTS

Mar 2020 – Ongoing	<p><b>FIVE of Olympics’ Flag – Polisocial Award 2019</b>  Grant holder: Politecnico di Milano  Partners: Comune di Milano, Città Metropolitana di Milano, Urban@IT, OMERO  Scientific coordinator: Prof. Irene Bengo (Politecnico di Milano, DIG)  Topic: ex-ante socio-economic and environmental impact evaluation of Olympic Games event by means of an integrated tool based on system dynamics and input-output models.</p>
Mar 2020 – Ongoing	<p><b>The new geopolitics of renewable energy: a changing picture of strengths, weaknesses, opportunities and threats</b>  Funder: Enel Foundation  Partners: SDA Bocconi School of Management  Scientific coordinator: Prof. Emanuela Colombo, Prof. Matteo Rocco (Politecnico di Milano, DENG)  Topic: definition of scenarios for future global flows and trades of rare raw materials and impact analysis on renewable energy transition.</p>
Feb 2019 – Ongoing	<p><b>AID 11387 Agenzia Italiana di Cooperazione e Sviluppo (AICS) – Piano per il Monitoraggio dell’iniziativa Illumina: accesso all’energia e empowerment delle donne</b>  Grant holder: AICS Maputo  Partners: AVSI, COSV  Scientific coordinator: Prof. Emanuela Colombo (Politecnico di Milano, DENG)</p>

- Topic: Monitoring and Evaluation (M&E) of the Energy Program run by AICS in Mozambique.
- Mar 2019 – May 2020 **Boa\_Ma\_Nha Maputo! – Polisocial Award 2018**  
 Grant holder: Politecnico di Milano  
 Partners: Eduardo Mondlane University (Maputo), AICS Maputo, Mozambican NGOs  
 Scientific coordinator: Prof. Laura Montedoro (Politecnico di Milano, DASTU)  
 Topic: Integrated context assessment and scenario analysis for future development of Great Maputo region in Mozambique.
- Apr 2018 – Jan 2019 **A model-based framework for evaluating Performance and Impact of sustainable energy strategies: synergy and matches with the New Multi-Tier Framework**  
 Funder: Enel Foundation  
 Partners: ESMAP (World Bank), Enel Green Power Chile  
 Scientific coordinator: Prof. Emanuela Colombo (Politecnico di Milano, DENG)  
 Topic: a Performance and Impact evaluation model for sustainable energy strategies: synergy and matches

## 6. PUBLICATION ACTIVITY

### 6.1. PUBLICATIONS

#### NATIONAL/INTERNATIONAL JOURNAL

- J1. Stevanato N, **Rinaldi L**, Pistolesse S, Balderrama S, Quolin S, Colombo E  
*Modelling of a Village-Scale Multi-Energy System for the Integrated Supply of Electrical and Thermal Energy*, Applied Sciences, 10, 7445, 2020, doi.org/10.3390/app10217445
- J2. Stevanato N, Lombardi F, Guidicini G, **Rinaldi L**, Balderrama S, Pavicevic M, Quolin S, Colombo E  
*Long-term sizing of rural microgrids: accounting for load evolution through multi-step investment plan and stochastic optimization*, Energy for Sustainable Development, 58, 16-19, 2020, doi.org/10.1016/j.esd.2020.07.002

#### NATIONAL/INTERNATIONAL CONFERENCE PROCEEDINGS

- C1. Stevanato N, Lombardi F, Balderrama S, Guidicini G, **Rinaldi L**, Pavicevic M, Quolin S, Colombo E  
*Exergy based methods for economic and environmental design optimization of energy systems*  
 In Proceedings of the 14th Conference on sustainable development of energy, water and environment systems (SDEWES 2019). Dubrovnik, Croatia, Oct 1-6, 2019

#### NATIONAL/INTERNATIONAL CONFERENCE POSTER SESSIONS

- P1. Stevanato N, Balderrama S, Lombardi F, Guidicini G, **Rinaldi L**, Quolin S, Colombo E  
*Holistic framework for multi-vector load projection and stochastic system sizing for Rural Access to Energy* In poster session of the 10th Open Energy Modelling Initiative (OPENMOD 2020). Berlin, Germany, Jan 15-17, 2020

### 6.2. INTERNATIONAL/NATIONAL CONFERENCES

2020

- **10<sup>th</sup> Open energy modelling initiative** (OPENMOD 2020), Jan 15-17, 2020, Berlin, Germany
- 2019
- **14<sup>th</sup> Conference on sustainable development of energy, water and environment systems** (SDEWES 2019), Oct 1-6, 2019, Dubrovnik, Croatia

## 7. OTHER ACTIVITIES

Sep 2017                      **Support staff at *Coordinamento Universitario Cooperazione allo Sviluppo* conference**  
(CUCS 2017), Sep 14-15, Milan, Italy

## 8. LANGUAGES

Mother language:            **Italian**  
Other languages:            **English (C1 level, Cambridge ESOL FCE Grade A)**