

Scientific Curriculum Vitae



Prof. Ing. Mario Grosso, PhD

DICA – Department of Civil and Environmental Engineering
Politecnico di Milano

Piazza Leonardo da Vinci 32, 20133 Milano

Tel: +39-02-23996415 (office); +39-338-7681704 (mobile)

Fax: +39-02-700590967

e-mail: mario.grosso@polimi.it

<http://www.dica.polimi.it/u?n=mario.grosso>

<http://www.aware.polimi.it>

Personal homepage: <http://www.mariogrosso.it>

ORCID: 0000-0001-8953-636X

PERSONAL INFORMATION

Born in Ivrea (TO) on April 8th, 1973

Living in Oleggio (NO), via Bedisco 28

Married, with three children

SYNTHETIC PROFILE

He graduated in 1997 in Environmental Engineering at Politecnico di Milano, where he also earned a PhD in Sanitary Engineering (year 2001) on the subject of PCDD/F formation and destruction mechanisms in municipal waste incineration plants.

Subsequent post-doc research (years 2001-2004) was devoted to the technologies for recovery and disposal of solid waste and of residues, to integrated waste management, to flue gas treatment technologies for industrial plants, to the definition of scenarios for emission reduction, as well as to Life Cycle Assessment (LCA).

Following the entry into service as a full-time researcher in 2005, he has developed and consolidated the waste management and assessment research group, with a strong focus on treatment technologies, integration between material and energy recovery and LCA as a tool to define optimal solutions. The research activity is funded by both public and private sectors, including some competitive funding.

On April 2015 he has been enrolled as Associate Professor at the DICA Department of Politecnico di Milano.

The research group AWARE (Assessment on WASTE and RESOURCES) operating under his supervision counts 1 senior researcher, 2 Post-doc and 3 graduate collaborators. Most of the topics related to waste management are now covered, from waste prevention to recycling, energy recovery and disposal.

He has advised or co-advised a number of Master Thesis and 4 PhD thesis.

He has co-authored nearly 160 publications, 50 of which in ISI-rated journals (*h-index*: 20), and has attended a number of international conferences and symposia.

He regularly teaches “Solid waste management and treatment” and “Bio-energy and waste-to-energy technologies” Master Courses at Politecnico di Milano, as well as “Principles of

technologies for environmental protection” at L. Bocconi University. All courses are given in English language.

He is co-founder and member of the Scientific Board of the “MatER” Research Center, established within the LEAP laboratory in Piacenza. He is also member of the technical-scientific committee of LEAP.

He is Associate Editor of the “Waste Management & Research” Journal since May 2015.

He was founder of AIAT (the Italian environmental engineers associations), where he coordinates the Scientific Committee. He is vice-president of ENEP, the European Network of Environmental Professionals, after having served as the General Secretary. He is member of the Scientific Committee of “Climalteranti” (www.climalteranti.it), a scientific blog dealing with the climate change debate.

He is member of IWWG (International Waste Working Group), of ISWA (International Solid Waste Association), of GITISA (the Italian network of Sanitary-Environmental Engineering) and of the Italian LCA network. He is part of the International Expert Group (IEG) on LCA applied to waste management.

In 2013 he visited the Institute for Thermal Power Engineering at the Zhejiang University in Hangzhou (China), where he gave some lectures on waste management and LCA and advised some PhD students. In 2014 he visited the Department of Environmental Engineering at the Kyoto University (Japan).

CURRENT POSITION

Associate Professor in Environmental Engineering, Department of Civil and Environmental Engineering, Politecnico di Milano (Permanent position). Scientific Sector: ICAR/03

Current activity includes research in the field of waste management and treatment, as well as teaching on the same topics. Life Cycle Assessment is widely applied to address key questions related to waste management, at both the technological and planning levels.

EDUCATION

- 1998–2001 Ph.D. in Environmental Engineering, Politecnico di Milano. Dissertation: “*Post-combustion PCDD/F formation and destruction mechanisms: experiences in a full scale waste incineration plant*” Advisor: prof. M. Giugliano, Co–advisor: prof. A. Buekens (VUB Bruxelles)
- 1997 Master degree in Environmental Engineering, Politecnico di Milano (Mark: 99/100). Master thesis: “*Experimental evaluation of waste tyres utilisation in cement kilns: technical, environmental and combustion implications*”. Awarded of the Ecopneus prize for Master thesis.
- 1991 High School Scientific Diploma, Liceo Scientifico “A. Antonelli”, Novara

MAJOR TEACHING ACTIVITIES

- Since 2012 Politecnico di Milano
“*Solid waste management and treatment*” (Master of Science in Environmental Engineering)
- Since 2012 Politecnico di Milano
“*Bio-energy and waste-to-energy technologies*” (Master of Science in Energy Engineering for an Environmentally Sustainable World, Piacenza campus)

Since 2012	“L. Bocconi” commercial university, Milano “ <i>Science and technology for sustainability</i> ” (MAGER – Master in Green Management, Energy and Corporate Social Responsibility)
2004-2011	Politecnico di Milano “ <i>Solid waste</i> ” (Master of Science in Environmental Engineering)
2002-2011	“L. Bocconi” commercial University, Milano “ <i>Environmental technologies</i> ” (MEMAE – Master in Economia e Management dell’Ambiente e dell’Energia)
2001-2006	Politecnico di Milano “ <i>Sanitary–Environmental Engineering I</i> ” (Bachelor in Civil Engineering)
Since 2003	University of Bergamo, Dalmine. “ <i>Flue gas treatment</i> ” (PhD program in Technologies for Energy and the Environment)
2003	International Professor, Pristina Summer University (Kosovo) “ <i>Environmental engineering: solid waste</i> ”
2002	International Professor, Pristina Summer University (Kosovo) “ <i>Atmospheric pollution from combustion plants</i> ”
2001-2003	Politecnico di Milano Teaching assistant of the course “ <i>Air pollution control technologies</i> ” (Prof. Michele Giugliano, Master of Science in Environmental Engineering)

RESEARCH INTERESTS

The current research activity includes the followings:

- technologies for material and energy recovery from waste;
- recovery of solid residues from waste incineration plants;
- Life Cycle Assessment (LCA), with a special focus on its use for assessing strategies of waste management;
- Best Available Techniques (BAT) for the control of atmospheric emissions from industrial plants;
- experimental studies on the fate of organic and inorganic micropollutants in waste incineration plants;
- technologies for waste recycling;
- technologies for biological treatments of waste;
- strategies for waste prevention;
- assessment of the management of specific waste streams (i.e. WEEE, car fluff);
- flue gas cleaning system optimisation;
- environmental impact assessment;
- risk assessment.

MAJOR STUDIES AND RESEARCHES

Principal Investigator

2018	Comprehensive feasibility study for the closure of the informal dumpsite and construction of an integrated solid waste management facility in Ngong Town, Kenya – <i>UN-Habitat</i>
2017-2018	Assessment on the use of recycled paper bags for the collection of food waste –

	<i>Sumus Italia</i>
2018	Study on the streams of plastic packaging waste from source separation – <i>Corepla</i>
2017	Life Cycle Assessment in the sector of organic waste recycling – <i>CIC & Corepla</i>
2017-2018	Assessment of the energy generation from MSW by means of MBT processing and SRF utilisation – <i>RSE</i>
2017-2018	Greenrail, innovative and sustainable railway sleepers: the greener solution for railway sector – <i>European Union, SME Instrument</i>
2016-2017	Environmental Performances and Social Inclusion: a project for the Rocinha Favela in Rio de Janeiro, based on IMM methodology – <i>Polisocial Project</i>
2016	Energy and environmental evaluation of a technology for carbon dioxide submarine storage in glass-ceramic containers – <i>CO₂APPS</i>
2015-2016	Principal Academic Tutor of the multidisciplinary project E-MOD – “Electric MObility Development in Italy: a multidisciplinary evaluation” – <i>Alta Scuola Politecnica</i>
2016-2017	REDUCE - Research, education, communication: an integrated approach for the prevention of food losses – <i>A research project funded by the Italian Ministry of the Environment</i>
2015-2017	Mapping the packaging reuse in Italy – <i>CONAI</i>
2014	Analysis of the current treatment and recovery technologies of waste flat panel displays – <i>ENEA</i>
2013-2016	Technical-scientific support on waste treatment issues: MBT plants, bio-drying, bioreactor landfill, SRF – <i>A2A Ambiente</i>
2013-2015	Assessment of the current management of WEEE in Lombardia – <i>Finlombarda</i>
2013-2015	LCA for assessing waste prevention activities implemented in Regione Lombardia – <i>Finlombarda</i>
2013-2014	EIMPack – Economic Impact of the Packaging and Packaging Waste Directive. Costs and Benefits of the Recovery of Packaging Waste: The Case of Italy – <i>European Investment Bank</i>
2012	Optimisation of the food waste collection and treatment – <i>Novamont</i>
2011–2015	Assessment of innovative high temperature alkaline reactants for flue gas cleaning in WTE plants – <i>Unicalce</i>
2010-2016	Scientific support for the Environmental Product Declaration (EPD) of cartonboard made primarily of recycled fibers – <i>Reno De Medici SpA</i>
2010–2012	“SEWAS” project (Sustainable European Waste Systems). A research collaboration between CEWEP, Technical University of Denmark (DTU) and Politecnico di Milano (POLIMI) – <i>CEWEP</i>
2011	Energy and environmental balances of the anaerobic digestion of food waste – <i>MatER Research Center</i>
2011	Environmental implications of atmospheric emissions related to the increase of the Trezzo waste-to-energy plant capacity – <i>Prima Srl</i>
2010-2011	Assessment of the mercury emissions from waste-to energy plants and indications for the increase of its abatement efficiency – <i>Herambiente Srl</i>
2010–2012	“GERLA” project: Integrated waste management in Lombardia: Life Cycle Assessment – <i>Cestec Regione Lombardia</i>
2009–2012	Separation and recovery of metals from waste incineration bottom ash – <i>CiAl, Consortium for Aluminium Packaging; EAA – European Aluminium Association</i>
2009–2010	Life Cycle Assessment of RDF production and its co-incineration in the Fusina

- coal fired power plant in comparison with alternative options – *Ladurner Ecologia SpA*
- 2009 Separation and recovery of metals and of the inert fraction of incineration bottom ash – *CiAl, Consorzio Imballaggi Alluminio*
- 2009 Balance of organic micropollutants release from the Frullo Energia Ambiente WTE plant – *Frullo Energia Ambiente Srl*
- 2007–2008 Monitoring and assessment of the ambient air quality in the surroundings of the Ginestreto sanitary landfill – *Municipality of Sogliano al Rubicone*

Collaborator

- 2009-2010 Thermal and mechanical-biological treatments (MBT) for the residual waste: general aspects and applicability to the Novara and VCO Provinces – *Consorzio di Bacino Basso Novarese*
- 2008–2009 Assessment of the environmental release of trace pollutants and of ultrafine particles from the Bologna waste-to-energy plant – *Emilia Romagna Region Environmental Protection Agency, Progetto MONITER*
- 2006–2009 Comparative analysis of strategies for material and energy recovery from waste – Research project funded by the *Italian Ministry of University and Research*
- 2007–2008 Energetic and environmental assessment of the waste management of the Province of Piacenza – *Tecnoborgo*
- 2006 Technical assessment of Waste-To-Energy plants of the Province of Milano in the framework of the new waste management plan, including the definition of guidelines for new plants – *Province of Milano*
- 2005–2006 Experimental assessment of the performances of different chemicals for the removal of acid gases in the Milano waste incineration plant – *AMSA*
- 2005–2006 Environmental balance of the material recovery activities of source separated waste streams in the Reggio Emilia Province – *ATO*
- 2004–2005 Assessment of the atmospheric emissions and of the operation of the “Silla-2” incineration plant – *AMSA*
- 2004–2005 Environmental and energetic assessment of four possible strategies for energy recovery from waste in the Reggio Emilia Province – *AGAC*
- 2003–2005 Environmental, energetic and economic balances of different strategies of energy recovery from waste, with special reference to the co-combustion of Refuse Derived Fuels in industrial plants – *Federambiente*
- 2003 Analysis of the stack emission data and of the air quality in the proximity of the “Pontenossa” plant – *Pontenossa SpA*
- 2003 Comparison between the greenhouse gases emissions of different energy recovery strategies from solid waste – *Ecodeco*
- 2003 Variation of the emission loads and of the expected soil concentrations following the upgrading of the Rezzato cement production plant; critical assessment of the technology foreseen for the new kiln – *Italcementi*
- 2002–2003 Study on the fluxes of organic and inorganic micropollutants in the Dalmine MSWI and evaluation of the possible improvements of the environmental performances – *NoyVallesina Engineering*
- 2002–2003 Health risk assessment for the future MSW incineration of Trento – *University of Trento*
- 2002–2004 Experimental evaluations program on the MSW incinerator of Vercelli, following the plant partial renewal – *Province of Vercelli*
- 2001–2002 The available technologies for the reduction of atmospheric emissions in cement and lime production plants – *IRER, Regione Lombardia, Air Quality*

	<i>Remediation Plan (PRQA)</i> ;
2001	Environmental evaluations of the waste treatment and disposal plants of the municipality of Bolzano – <i>University of Trento</i>
2001–2002	Environmental, energetic and economic balances of different strategies of energy recovery from waste – <i>Federambiente</i> ;
1999–2000	Benchmark for the Best Available Technologies in the municipal waste incineration sector – <i>Province of Milan, Air Quality Remediation Plan (PRQA)</i> ;
1998–2000	Overall environmental monitoring of the Bolzano MSW incineration plant – <i>Snamprogetti SpA</i>
1998–2001	Assessment of the streams of hazardous compounds in a MSW incineration plant aimed to the management of the final disposal of the residues – <i>Silea SpA</i> ;
1996–1997	Experimental evaluation of waste tires utilisation in a cement kiln – <i>Unicem SpA</i>

CONFERENCES AND JOURNALS

Associate Editor of “Waste Management & Research” Journal.

Invited speaker at the “Waste Prevention & 3R Workshop 2015”, organised by the Kyoto University, Environment Preservation Research Center, supported by the Japanese Ministry of the Environment (MoE)

Member of the Scientific and Organising Committee of “SIDISA 2012 – Sustainable technologies for environmental protection”, International Symposium on Sanitary-Environmental Engineering – 9th Edition. Milan, 26-29 June 2012.

Co-chair of the following training courses (in Italian):

2009	64° Corso di Aggiornamento in Ingegneria Sanitaria-Ambientale “ <i>Tecnologie per il BIOWASTE</i> ”, Politecnico di Milano, 23-26 Febbraio 2009
2008	“ <i>EMAS per la filiera trattamento rifiuti e recupero energetico (NACE 90, 37 e 40)</i> ”, Scuola EMAS ed Ecolabel del Politecnico di Milano
2008	63° Corso di Aggiornamento in Ingegneria Sanitaria-Ambientale “ <i>La gestione integrata dei rifiuti</i> ”, Politecnico di Milano, 28-31 Gennaio 2008

Co-Founder and member of the Scientific Committee of “Ingegneria dell’Ambiente”, an open-access peer reviewed journal devoted to the dissemination of Environmental Engineering research topics in Italian language.

He serves as a reviewer for the following international journals:

- Waste Management
- Waste Management & Research
- Journal of Cleaner Production
- Journal of Hazardous Materials
- Chemosphere
- Environmental Science & Technology
- Resources, Conservation & Recycling
- Science of the Total Environment
- Environmental Science and Pollution Research

FOREIGN LANGUAGES

- Fluent in English
- Good knowledge of French

AFFILIATIONS

- Member of the Scientific Committee of the “MatER” Research Center (Material & Energy from Refuse, www.mater.polimi.it) and of the technical-scientific committee of LEAP (www.leap.polimi.it)
- Founding member and member of the board of AIAT (Italian Environmental Engineers Association, www.ingegneriambientali.it)
- President of the Scientific Committee of AIAT
- Vice-President and former General Secretary of ENEP (the European Network of Environmental Professionals)
- Member of IWWG (the International Waste Working Group)
- Member of ISWA (International Solid Waste Association)
- Member of the Scientific Committee of “Climalteranti” (www.climalteranti.it)
- Member of the Italian LCA network (www.reteitalianalca.it)
- Member of GITISA (the Italian Academic Grouping of Sanitary-Environmental Engineering)
- Involved in the International Expert Group on LCA applied to waste management

INTERNATIONAL TEACHING EXPERIENCES

- International Professor at the Pristina Summer University (Kosovo), years 2002 and 2003.
- Visiting professor at the Institute for Thermal Power Engineering (Zhejiang University, Hangzhou – China), April 2013.
- Visiting professor at the Department of Environmental Engineering of the Kyoto University (Japan), July-August 2014.

BIBLIOMETRIC INDICES (*as of October, 2017*)

Scopus

Documents: 49
 Citations: 1209 total citations by 906 documents
 h Index: 19

Web of Science

Documents: 44
 Citations: 1090 total citations by 807 documents
 H index: 19

Google Scholar

Citations: 1686 (*1184 since 2012*)
 H index: 20 (*19 since 2012*)
 i10-index 27 (*24 since 2012*)

HOBBIES AND INTERESTS

Travelling, across Europe and world-wide

Sustainable mobility (urban cycling, electric mobility, intermodality). See

<http://www.pensierinbicicletta.it>

Doing sports (skiing, cycling, swimming)

The wilderness

Involving my family in my work-related trips, especially the long-lasting ones

SELECTED RECENT PUBLICATIONS

Scientific papers

- Grosso M., Falasconi L. (2018) “*Addressing food wastage in the framework of the UN Sustainable Development Goals*” Waste Management & Research 36, 97-98
- Grosso M., Rigamonti L., Niero M. (2017) “*Circular economy, permanent materials and limitations to recycling: Where do we stand and what is the way forward?*”. Waste Management & Research 35, 793-794
- Tua C., Nessi S., Rigamonti L., Dolci G., Grosso M. (2017). “*Packaging waste prevention in the distribution of fruit and vegetables: An assessment based on the life cycle perspective*”. Waste Management & Research 35, 400-415
- Caserini, S., Dolci, G., Azzellino, A., Lanfredi, C., Rigamonti, L., Barreto, B., Grosso, M. (2017). “*Evaluation of a new technology for carbon dioxide submarine storage in glass capsules*”. International Journal of Greenhouse Gas Control, 60, pp. 140-155.
- Sakai, S.-I., Yano, J., Hirai, Y., Asari, M., Yanagawa, R., Matsuda, T., Yoshida, H., Yamada, T., Kajiwara, N., Suzuki, G., Kunisue, T., Takahashi, S., Tomoda, K., Wuttke, J., Mährlitz, P., Rotter, V.S., Grosso, M., Astrup, T.F., Cleary, J., Oh, G.-J., Liu, L., Li, J., Ma, H.-W., Chi, N.K., Moore, S. (2017). “*Waste prevention for sustainable resource and waste management*”. Journal of Material Cycles and Waste Management 19: 1295-1313.
- Grosso, M. (2016). “*Sound and advanced municipal waste management: Moving from slogans and politics to practice and technique*”. Waste Management and Research, 34 (10), pp. 977-979
- Dolci, G., Nessi, S., Rigamonti, L., Grosso, M. (2016). “*Life cycle assessment of waste prevention in the delivery of pasta, breakfast cereals, and rice*”. Integrated Environmental Assessment and Management, 12 (3), pp. 445-458.
- Dolci, G., Tua, C., Grosso, M., Rigamonti, L. (2016). “*Life cycle assessment of consumption choices: a comparison between disposable and rechargeable household batteries*”. International Journal of Life Cycle Assessment 21:1691–1705.
- Rigamonti, L., Sterpi, I., Grosso, M. (2016). “*Integrated municipal waste management systems: An indicator to assess their environmental and economic sustainability*” Ecological Indicators, 60, pp. 1-7.
- Fontana, D., Forte, F., De Carolis, R., Grosso, M. (2015) “*Materials recovery from waste liquid crystal displays: A focus on indium*” Waste Management 45, 325-333
- Nessi, S., Rigamonti, L., Grosso, M. (2015) “*Packaging waste prevention activities: A life cycle assessment of the effects on a regional waste management system*”. Waste Management and Research, 33 (9), pp. 833-849.
- Rigamonti, L., Ferreira, S., Grosso, M., Marques, R.C. (2015) “*Economic-financial analysis of the Italian packaging waste management system from a local authority's perspective*” (2015) Journal of Cleaner Production, 87 (1), pp. 533-541.
- Biganzoli L., Falbo A., Forte F., Grosso M., Rigamonti L. (2015). “*Mass balance and life cycle assessment of the waste electrical and electronic equipment management system implemented in Lombardia Region (Italy)*”. Science of the Total Environment 524–525 (2015) 361–375
- Biganzoli L., Racanella G., Rigamonti L., Marras R., Grosso M. (2015) “*High temperature abatement of acid gases from waste incineration. Part I: Experimental tests in full scale plants*” Waste Management 36, 98–105
- Nessi, S., Rigamonti, L., Grosso, M. (2014), “*Waste prevention in liquid detergent distribution: a comparison based on life cycle assessment*” Science of the Total Environment 499, 373–383

- Rigamonti, L., Grosso, M., Møller, J., Martinez Sanchez, V., Magnani, S., Christensen, T.H. (2014) “*Environmental evaluation of plastic waste management scenarios*” Resources, Conservation and Recycling, 85, pp. 42-53
- Biganzoli, L., Grosso, M., Forte, F. (2014) “*Aluminium mass balance in waste incineration and recovery potential from the bottom ash: A case study*” Waste and Biomass Valorization, 5 (1), pp. 139-145
- Biganzoli, L., Ilyas, A., Praagh, M.V., Persson, K.M., Grosso, M. (2013) “*Aluminium recovery vs. hydrogen production as resource recovery options for fine MSWI bottom ash fraction*” Waste Management, 33 (5), pp. 1174-1181
- L. Rigamonti, A. Falbo, M. Grosso (2013) “*Improving integrated waste management at the regional level: the case of Lombardia*” Waste Management & Research 31, 946-953
- S. Nessi, L. Rigamonti, M. Grosso (2013) “*Discussion on methods to include prevention activities in waste management LCA*” International Journal of Life Cycle Assessment 18, 1358-1373
- L. Biganzoli, Grosso M. (2013) “*Aluminium recovery from waste incineration bottom ash and its oxidation level*” Waste Management & Research, 31 (9), pp. 954-959
- M. Grosso, C. Nava, R. Testori, L. Rigamonti, F. Viganò (2012) “*The implementation of anaerobic digestion of food waste in a highly populated urban area: an LCA evaluation*” Waste Management & Research 30, 78-87
- L. Biganzoli, M. Grosso, M. Giugliano, M. Campolunghi (2012) “*Chemical and sewage sludge co-incineration in a full-scale MSW incinerator: toxic trace element mass balance*” Waste Management & Research 30, 1081-1088
- L. Biganzoli, L. Gorla, S. Nessi, M. Grosso (2012) “*Volatilisation and oxidation of aluminium scraps fed into incineration furnaces*” Waste Management 32, 2266–2272
- S. Nessi, L. Rigamonti, M. Grosso (2012) “*LCA of waste prevention activities: A case study for drinking water in Italy*” Journal of Environmental Management 108, 73-83
- L. Rigamonti, M. Grosso, L. Biganzoli (2012) “*Environmental Assessment of Refuse-Derived Fuel Co-Combustion in a Coal-Fired Power Plant*” Journal of Industrial Ecology, 16, 748-760
- M. Grosso, L. Biganzoli, L. Rigamonti, S. Cernuschi, M. Giugliano, V. Poluzzi, V. Biancolini (2012) “*Experimental evaluation of PCDD/Fs and PCBs release and mass balance of a WTE plant*” Chemosphere 86, 293-299

Books (in Italian)

- M. Grosso, M.C. Montani (2015) “*Dove vanno a finire i nostri rifiuti? La scienza di riciclare, gestire, smaltire gli scarti*”. Zanichelli. ISBN: 9788808355485
- L. Rigamonti, M. Grosso (2009). “*Riciclo dei rifiuti. Analisi del ciclo di vita dei materiali da imballaggio*” Dario Flaccovio Editore, Collana Ambiente. ISBN: 978-88-7758-897-5, pagg. 288
- M. Giugliano, M. Grosso, L. Rigamonti (edited by, 2009) “*La gestione integrata dei rifiuti*” CIPA Editore, Collana Ambiente – Volume 32 – ISBN 978-88-95591-04-9, pagg. 453
- R. Vismara, M. Grosso, M. Centemero (edited by, 2009) “*Compost ed energia da biorifiuti*” Dario Flaccovio Editore, ISBN 978-88-7758-861-6, pagg. 456
- S. Cernuschi, M. Giugliano, M. Grosso, G. Lonati (edited by, 2007) “*Il particolato fine in atmosfera*”. CIPA Editore, ISBN 978-88-95591-01-8