

# SAMUEL PEDRO DE OLIVEIRA NIZA

## ***Personal Data***

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Nationality: Portugal  
Birth place and date: Lisboa, 16/02/71  
Identity card: 9551371

## ***Academic degrees***

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**2007**

**PhD in Environmental Engineering**, Instituto Superior Técnico da Universidade Técnica de Lisboa.

**1998**

**Engineering Diplom (5 years) in Environmental Engineering**, Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa.

## ***Previous and current scientific and/or professional activities***

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**10/1998 - 11/1999**

Advanced Technician HISFOR - Higiene, Segurança e Formação, Lda.

**12/1999 - 05/2002**

Researcher at CENDES, Centro para o Desenvolvimento Empresarial Sustentável of INETI, with grant financed by INETI.

**04/2002 - 03/2006**

PhD Student with grant financed by FCT, Fundação para a Ciência e a Tecnologia

**03/2006 - 12/2007**

Researcher at IN+, Centro de Estudos em Inovação, Tecnologia e Políticas de Desenvolvimento of IST

**01/2008 - 06/2009**

Post-Doctoral position at the MIT-Portugal Program, in Instituto Superior Técnico, with a grant financed by Fundação para a Ciência e Tecnologia (FEDER, POCTI).

**07/2009 - present**

Assistant Researcher at Instituto Superior Técnico

## ***Domains of specialization***

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Urban Metabolism; Industrial Ecology methods and tools; Material Flow Accounting and Analysis.

## ***Other domains***

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Waste management policies;.Sustainable planning; Sustainable production and consumption.

## **Research projects**

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"MeSUr - Metrics framework for Urban Metabolism Sustainability"

Reference: PTDC/SEN-ENR/111710/2009

IST 2010/2013

Project Coordinator: Samuel Niza

Principal Contractor: IST/UTL

Participating Institutions: FEUP

Funding: FCT, Fundação para a Ciência e Tecnologia

"Definition of Design Guidelines for the Sustainability Master Plan of Algarve Energy Park"

IST 2010

Project Coordinator: Samuel Niza

Funding: Algarve Energy Park

"ResiSt - Supporting Urban RESilience through the management of urban STock resources"

Reference: PTDC/SENENR/103044/2008

IST 2010/2013

Project Coordinator: Samuel Niza

Principal Contractor: IST/UTL

Participating Institutions: MIT

Funding: FCT, Fundação para a Ciência e Tecnologia

"iTEAM - integrated Transportation and Energy Activity-based model"

Reference: MIT-Pt/SES-SUES/0041/2008

IST 2009/2011

Principal Contractor: Faculdade de Ciências e Tecnologia da Universidade de Coimbra

Participating Institutions: Instituto Superior Técnico, Faculdade de Engenharia da Universidade do Porto, MIT

Funding: FCT, Fundação para a Ciência e a Tecnologia (

"APA PNGR" [Portuguese Waste Management Plan 2011-2020]

IST, 2008/2009

Project coordinator: Paulo Ferrão

External Partners: Agência Portuguesa do Ambiente

Funding: Agência Portuguesa do Ambiente

"INR 2007"

IST, 2007

Project coordinator: Paulo Ferrão

External Partners: Instituto dos Resíduos, INCM – Imprensa Nacional Casa da Moeda

Funding: Instituto dos Resíduos

"INR 2005"

IST, 2005/2006

Project coordinator: Paulo Ferrão

External Partners: Instituto dos Resíduos

Samuel Niza

Funding: Instituto dos Resíduos

“BM Lisboa – Balanço de materiais do concelho de Lisboa”  
IST, 2005/2006

Project coordinator: Paulo Ferrão  
External Partners: Lisboa E-Nova  
Funding: Lisboa E-Nova

FIVE – Observatório do QCA III  
IST, 2005/2005

Project Coordinator: Manuel Heitor  
External Partners: Observatório do QCA III.  
Funding: Direcção do Desenvolvimento Regional Projecto

“SECIL – Integrar progressivamente a Sustentabilidade na Gestão Estratégica do Grupo SECIL”  
INETI 2004

Coordinator: Rui Frazão  
Funding: SECIL Group EU project

“MOSUS, Is Europe sustainable? Modeling opportunities and limits for restructuring Europe towards Sustainability”

INETI 2002/2006

Coordinator at INETI: Rui Frazão

External Partners: International Institute for Applied Systems Analysis, Austria; Gesellschaft für wirtschaftliche Strukturforshung mbH, Germany; Sustainable Europe Research Institute, Austria; Charles University Prague, Environmental Center, Czech Republic; London School of Economics, UK; Austrian Institute of Economic Research, Austria; Institute for Sustainable Development, Poland; Research Centre on the Portuguese Economy, Portugal; Research Centre for Sociological Studies, Portugal; University of Lodz, Poland; Center for International Climate and Environmental Research, University of Oslo

Funding: European Commission, DG Research, 5th framework programme (sub-programme energy, environment and sustainable development)

Projecto Mobilizador NOVOVIDRO

INETI, 1999/2000

Coordinators: Constança Peneda/Ana Paula Duarte

Funding: Fundo Social Europeu through Programa SINDEPEDIP - Projecto Mobilizador para o Desenvolvimento Tecnológico, Medida 4.4, Acção B, Processo 25/00168-

## ***Lecturing***

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### **2008 - present**

Teaching assistant of the Industrial Ecology course, Instituto Superior Técnico (coordinator: Professor Paulo Ferrão)

### **2009 - present**

Lecture “Beyond operational energy” in the MIT Portugal PhD course Energy in Buildings. (coordinator: Professor Vítor Leal, FEUP)

## 2006

Lectures "Industrial Ecology and Economy Metabolism" and "Eco-industrial Parks – International examples", XVII Summer Course BEST - Board of European Students of Technology, "Engineer the future: get yourself sustainable!". IST/UTL.

### ***Supervising experience***

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2011 - ... (Supervision): Sara Raquel Palma Amaral, MSc thesis "Risk analysis and urban critical events in an Urban Metabolism approach". IST/UTL (In progress)

2011 - ... (Supervision): David Manuel Figueiredo, MSc thesis: "Accounting building stocks for the Lisbon Metropolitan Area". IST/UTL (In progress)

2010 - ... (Co-Supervision): António Lorena, PhD thesis, "Consumption of materials and energy in the LMA: planning for the initiative A Resource-Efficient Europe". IST/UTL (In progress)

2008 - ... (Co-supervision): Leonardo Tavares Rosado, PhD thesis "Modeling Consumers Material Flows at the Urban Scale". IST/UTL (In progress)

2008 (Co-supervision): Ana Carina Coimbra da Costa, MSc thesis "Desenvolvimento de uma metodologia expedita de cálculo da Pegada Ecológica de uma cidade – O caso de Lisboa" [Development of a smart method to measure the Ecological Footprint of a city - the Lisbon case study]. IST/UTL.

### ***Organizations***

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- Workshop Lançamento do Projecto ResiSt - Promoção da Resiliência Urbana através da gestão dos stocks de recursos urbanos [Kick off Workshop of ResiSt project – promoting urban resilience through the management of urban stock resources], 22 April 2010.[  
[http://lisboaenova.org/index.php?option=com\\_content&task=view&id=1299&Itemid=482](http://lisboaenova.org/index.php?option=com_content&task=view&id=1299&Itemid=482)]
- Technical Committee of the 5th International Conference of the International Society for Industrial Ecology, 21-24 June 2009 [<http://www.isie2009.com/index.php?lop=> ]
- Technical Committee of the 2006 Technology, Management and Policy Graduate Consortium Meeting, 25-27 June 2006 [<http://in3.dem.ist.utl.pt/tmpgpc/>]

### ***Papers in international scientific periodicals with referees***

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- Niza, S., Rosado, R., Ferrão, P. 2009. Urban Metabolism: Methodological advances in Urban Material Flow Accounting based on the Lisbon case study. *Journal of Industrial Ecology* 13(3): 384-405.

- Behrens, A., Giljum, S., Kovanda, J., Niza S., 2007. The Material Basis of the Global Economy. Worldwide Patterns in Natural Resource Extraction and their Implications for Sustainable Resource Use Policies. *Ecological Economics*, 64: 444 – 453.
- Niza, S., Ferrão, P., 2006. A transitional economy's metabolism: the case of Portugal. *Resources Conservation & Recycling*, 46:265-280.

### ***Other publications (selected)***

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- Niza, S. 2011. As cidades como fonte de matérias primas [*Cities - sources of raw materials*]. In: Executive Digest Junho 2011.
- Ferrão, P., Niza, S. 2010. Cidades Sustentáveis: Ficção ou força motriz do crescimento económico dos países? [*Sustainable cities: fiction or driving force for economic growth?*]. In: Executive Digest, N.º50, II Série, Maio 2010.
- Niza, S., Câmara Pereira, F. 2010. A modelação integrada de sistemas de Transportes e de Energia no programa MIT Portugal [*Integrated modelation of transportation and energy systems in the MIT Portugal program*]. In: Climatização, N.º 68, Março/Abril 10.
- Almeida, A. M.; Ben-Akiva, M.; Câmara Pereira, F.; Ghauche, A.; Guevara, C.A.; Niza, S. and C. Zegras. 2009. A Framework for Integrated Modeling of Urban Systems. Proceedings do 45th ISOCARP Congress, Porto, 18-22 Outubro 2009.
- Clímaco, N., Wiesmann, D., Rosado, L., Niza, S., Ferrão, P. 2009. Uma visão sistémica dos Sistemas Urbanos [*A systemic framework of urban systems*]. In: Climatização, N.º 65, Setembro/Outubro 09.
- Niza, S. 2007. Uma avaliação do metabolismo da economia Portuguesa através da contabilidade dos fluxos de materiais [*Assessment of the Portuguese economy metabolism using material flow accounting*]. PhD Dissertation in Environmental Engineering. Lisboa: Instituto Superior Técnico/Universidade Técnica de Lisboa.
- Ribeiro, P., Niza, S., Ferrão, P. 2006. Material flow accounting and waste production forecasting - a tool for decision making. Proceedings of the 9th International Conference on Technology Policy and Innovation (ICTPI), Santorini, 18-21 June.
- Niza, S., Ferrão, P., 2005. Material Flow Accounting tools and its contribution for policy making. Paper publicado nos proceedings da ESEE2005, 6th International Conference of the European Society for Ecological Economics. Lisboa, 14-17 Junho 2005.
- Behrens, A., Giljum, S., Kovanda, J., Niza S., 2005. Global Patterns of Natural Resource Extraction. Implications for sustainable resource use policies in North and South. Proceedings of the ESEE2005, 6th International Conference of the European Society for Ecological Economics. Lisboa, 14-17 Junho 2005.

### ***Communications (selected)***

#### ***Oral communications by invitation***

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- Niza, S. “As cidades como fonte de recursos naturais” [*Looking at cities as sources of natural resources*]. Workshop Cidades Resilientes. Museu das Comunicações da Fundação Port. das Comunicações, September 2010.

- Niza, S. "A Sustentabilidade na perspectiva da Ecologia Industrial" [Sustainability in the aim of the Industrial Ecology Framework]. Jornadas de Engenharia Química e Biológica, JEQB 2010, Na vanguarda do Conhecimento. IST, April 2010.
- Niza, S. "As Tecnologias de Informação e Comunicação e a Sustentabilidade Urbana" [ICT and Urban Sustainability]. Introductory presentation to the discussion session Green Technology. Seminários IST-Tagus 2010 - XXI Revolutions. March, 2010.
- Niza, S. "A contabilidade dos fluxos de materiais como instrumento de avaliação do metabolismo da economia. O caso de Portugal". [Material flow accounting as a tool to assess the economy metabolism. Portugal case study] Lecture at Faculdade de Ciência e Tecnologia da Universidade de Coimbra. December 2007.
- Niza, S., Rosado, L. "A Matriz dos Materiais do Concelho de Lisboa" [Materials matrix of Lisbon Municipality]. Workshop Boas Práticas na Gestão de Resíduos [Workshop on waste management good practices]. Lisboa E-Nova. CIUL, 18 October 2007.
- Niza, S., Rosado, L. "Lisbon Materials Balance". Lecture for Ecology of Construction students. Building Technology Program. MIT, Cambridge, 4th April 2007.
- Niza, S. "A Matriz dos Materiais de Lisboa: Desenvolvimento de uma metodologia". [Materials matrix of Lisbon Municipality: Developing a methodology]. Workshop para a validação da metodologia para a elaboração da Matriz dos Materiais. Lisboa E-Nova. CIUL, Lisboa, 6 July 2006.
- Niza, S. "Desenvolvimento Sustentável. Ideias e conceitos sobre o tema". [Ideas and concepts about Sustainable Development]. Pedagogical Seminars of MEM, Movimento da Escola Moderna. Escola da Voz do Operário, Lisboa, 16 October 2004.
- Niza, S. "Desmaterialização. Como abordar os resíduos num cenário de Sustentabilidade?" [Dematerialization. How to approach wastes in a Sustainability Framework?]. III Seminário de Ambiente da Escola Superior de Tecnologia de Setúbal, Setúbal, 9 May 2002.

## ***Other oral communications***

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- Lorena, A., Figueiredo, D., Wiesmann, D. and S. Niza. Accounting and modelling building stocks for the Lisbon Metropolitan Area. ISIE 2011 Conference, 7-10 June 2011, University of California, Berkeley.
- Ferrão, P., Niza, S. and M. R. Macário. Industrial Ecology based Road Maps for Urban Services in Developing Countries. ISIE 2011 Conference, 7-10 June 2011, University of California, Berkeley
- Niza, S., Rosado, L., Costa, I., Wiesmann, D., Lorena, A., Quinn, D. and P. Ferrão. Self- sustainability and urban material stocks in Lisbon Metropolitan Area. ISIE 2011 Conference, 7-10 June 2011, University of California, Berkeley.
- Wiesmann, D., Rosado, L., Niza, S., Azevedo, I., Ferrão, P. and J. Fernández. Spatially Resolved Urban Material Consumption in the Residential Sector. ISIE 2011 Conference, 7-10 June 2011, University of California, Berkeley
- Niza, S. ResiSt - Supporting Urban RESilience through the management of urban Stock resources. ISIE MFA-ConAccount Meeting, 7-9 November 2010. Tokyo, Japan.
- Rosado, L., Ferrão, P., Niza, S. 2010. Modeling Household Material Flows in an Urban Metabolism context. ISIE MFA-ConAccount Meeting, 7-9 November 2010. Tokyo, Japan.
- Hatzopoulou, M; Niza, S.; Zegras, C., Pereira, F.; Fernandez, J. and M. Ben-Akiva. "Urban metabolism and land-use transport modelling: addressing scale issues and crossing disciplinary boundaries". Integrated Modeling and Simulation Workshop. IST, 15-17 July 2010.
- Niza, S. "O projecto ResiSt – Introdução" [Introduction to the ResiSt project]. Workshop "Lançamento do Projecto ResiSt - Promoção da Resiliência Urbana através da gestão dos stocks de recursos urbanos" [Kick-off Workshop of the ResiSt project]. CIUL, 22 April 2010.
- Niza, S. "Urban Metabolism@IN+. An integrated vision of Urban Systems". Workshop "Apresentação de Experiências e Metodologia de Trabalho na Perspectiva de uma possível aplicação no caso do AEP" [1st Workshop of Algarve Energy Park Sustainability Guidelines], IST-Taguspark, 19 April 2010.
- Niza, S. "iTEAM - A Framework for Integrated Modeling of Urban Systems". 45th ISOCARP Congress, Porto, FEUP, 18-22 October 2009.
- Niza, S., Ferrão, P. "Evaluating the Sustainability of Urban Development Projects: The Case of Lisbon Municipality". ISIE 2009, 5th International Conference on Industrial Ecology: Transitions Towards Sustainability. Lisboa, Fundação Calouste Gulbenkian, 21-24 June 2009.
- Rosado, L., Niza, S., Ferrão, P., Fernandez, J. "Urban MFA with sector and spatial resolution. The case of the Lisbon's Metropolitan Area". ISIE 2009, 5th International Conference on Industrial Ecology: Transitions Towards Sustainability. Lisboa, Fundação Calouste Gulbenkian, 21-24 June 2009.
- Niza, S.; Rosado, L. "Methodological advances in urban material flow accounting - the Lisbon case study". ConAccount 2008: "Urban metabolism: measuring the ecological city". Prague, Czech Republic, 11-12 September 2008.
- Ribeiro, P., Niza, S., Ferrão, P. 2006. Material flow accounting and waste production forecasting - a tool for decision making. 9th International Conference on Technology Policy and Innovation (ICTPI), Santorini, 18-21 June.

- Niza, S. "Material Flow Accounting tools and its contribution for policy making". Technology, Management, and Policy Graduate Consortium, 4th Annual Meeting. MIT, Cambridge, Massachusetts, USA, 26-28 June 2005.
- Niza, S., Ferrão, P. "Material Flow Accounting tools and its contribution for policy making". ESEE2005, 6th International Conference of the European Society for Ecological Economics. Lisbon, Portugal, 14-17 June 2005.
- Niza, S. "The dynamics of material input in transitional economies. The Portuguese case". ConAccount Meeting 2004. Zurich, Switzerland, 11-12 October 2004.