

# Peter Mulder



TNO Energy Transition Studies

Radarweg 60, 1043 NT Amsterdam, The Netherlands

T +31 (0)6 2512 0867, E [p.mulder@tno.nl](mailto:p.mulder@tno.nl)

W <http://www.petermulder.net>

ORCID 0000-0002-9578-9299, Web of Science R-5057-2017

Date of Birth 28.09.1974; Married, 2 children (2012, 2014)

Languages: Dutch (mother tongue), English (fluent), Portuguese (good), German (good)

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## Education

Ph.D Economics, Vrije Universiteit Amsterdam, 2003.

Specialization: Macroeconomics, energy economics.

Dissertation: On the Economics of Technology Diffusion and Energy Efficiency.

MSc Economics, Vrije Universiteit Amsterdam, 1998.

Specialization: Macroeconomie, milieueconomie; bijvakken in filosofie en geschiedenis.

Thesis: Evolutionaire economie, de theorie van zelforganisatie en duurzame ontwikkeling. Een onvoltooide symfonie. [Evolutionary Economics, the Theory of Self-Organization and Sustainable Development. An Unfinished Symphony].

## Employment

- 2020 – Senior Researcher  
Energy Transition Studies, TNO
- 2007 – 2020 Assistant Professor  
Department of Spatial Economics, Vrije Universiteit Amsterdam
- 2011 Visiting Research Fellow  
Department of Agricultural Economics, Purdue University, Indiana, USA
- 2005 – 2007 Consultant / policy advisor in Mozambique  
Ministry of Energy, Directorate Studies and Planning (DEP)  
Ministry of Economic Affairs (MPD), Directorate Economic Analysis and Policy (DNEAP)  
via Embassy Denmark, Maputo & Danish International Development Agency (DANIDA)
- 2004 – 2005 Post-Doctoral Researcher  
Department of Spatial Economics, Vrije Universiteit Amsterdam
- 2003 – 2004 Research Scholar  
International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria
- 1998 – 2003 Junior Researcher / Ph.D. student  
Institute for Environmental Studies (IVM), Vrije Universiteit Amsterdam  
CPB Netherlands Bureau for Economic Policy Analysis, The Hague, The Netherlands

## Current research @ TNO

Employment effects and equity implications of the energy transition; energy poverty and the energy transition; competitiveness as barrier to industry decarbonization; narratives as determinant of consumer behavior in the energy transition; spatial implication of the energy transition.

## Management

- 2020 Project leader SEED-ERP project New Generation Energy Modelling, TNO
- 2017 – 2020 Coordinator partnership Vrije Universiteit Amsterdam / Spatial Economics & Universitas Indonesia / Faculty of Economics and Business, Jakarta
- 2015 – 2017 Chairman Educational Committee, Earth & Economics BSc program, VU Amsterdam
- 2013 – Coordinator minor Spatial Economics, VU Amsterdam
- 2013 – 2018 Coordinator KNAW Interdisciplinary research project ‘Local and Regional dimensions in Indonesia’s social and economic development; a governance approach’. In collaboration with KITLV Leiden University.
- 2013 – 2016 Member, Board of Examiners, University College Amsterdam
- 2008 – 2015 Member Educational Committee, Earth & Economics BSc program, VU Amsterdam

## Teaching

### *Qualifications:*

- 2018 Senior Teaching Qualification (SKO)
- 2008 University Teaching Qualification (BKO)

### *Courses:*

- 2018 – 2019 Governance for Society – Ec. Inequality VU, BSc Philosophy, Politics & Economics (PPE) & Political Populism in Europe
- 2017 – 2020 Urban Economics & Regional Policy Universitas Indonesia / Faculteit Economie, Jakarta
- 2016 – 2019 The City UvA, BSc Beta-Gamma  
Institute for Interdisciplinary Studies (IIS)
- 2016 – 2019 Economic Ethics VU, BSc Economics
- 2016 – 2019 Micro-economics II VU, BSc Earth & Economics
- 2013 – 2019 Research Seminar Spatial Economics VU, BSc Earth & Economics
- 2011 – 2019 Urban Economics VU, BSc Economics
- 2011 – 2019 Micro-economics I VU, BSc Earth & Economics
- 2007 – 2019 Thesis supervision VU, BSc Economics / Earth & Economics  
VU, MSc Economics / Spatial Economics  
University College Amsterdam
- 2013 – 2016 The Sustainable City University College Amsterdam
- 2011 – 2012 Urban Economics University College Amsterdam
- 2011 International Economic Development Purdue University, USA
- 2007 – 2016 Regional Economics VU, BSc Earth & Economics
- 2007 Environmental Economics Catholic University Mozambique (UCM), Beira

## Policy Advice / Consultancy

- 2020 *Energy Poverty and the Energy Transition*, White Paper, TNO. (with K. Straver)
- 2009 – 2012
- Training LEAP Energy Planning System, Ministry of Energy Mozambique
  - Update National Energy Statistics Mozambique, in collaboration with Ministry of Energy and Eduardo Mondlane Universiteit Mozambique

- 2005 – 2007
- Advising Minister of Energy and National Directors of DEP and DNEAP about current affairs, investment projects; pricing policy fuels and electricity.
  - Capacity building staff Ministries of Energy and Economic Affairs (MPD).
  - National Strategy Energy sector Mozambique 2007-2012  
Substantive guidance through regional consultation workshops with provincial governing bodies and energy companies; writing of draft strategy.
  - *Energy Outlook Mozambique*, DNEAP Discussion Paper No.53E.
  - Development and calibration 1<sup>th</sup> planning- and scenario model energy sector in Mozambique
  - *Exploring Natural Resources in Mozambique. Will it be a blessing or a curse?*  
DNEAP Discussion Paper No.54E. (with A. Bucuane)
  - Development and communication of National Energy Statistics 2006, Mozambique
  - Development and communication of 1<sup>th</sup> National Energy Statistics 2000-2005, Mozambique
  - *Exploring an Electricity Tax on Mega Projects in Mozambique*  
DNEAP Discussion Paper No.37E. ( with A. Bucuane)
  - *Rural Electrification in Mozambique (a Cost-Benefit Analysis)*  
DNEAP Discussion Paper No.36E. ( with J. Tembe)
  - *Impact of the Oil Price Increase on the Mozambican Economy* (in Portuguese)  
DNEAP Discussion Papers No.19P. (with C. Arndt, L. Matsinhe, E. Paulo and J.E. Van Dunem)
- 2000
- Effectiveness Energy Subsidies*, Report for Workinggroup IBO EnergySubsidies, Utrecht: Ecofys (with J. de Beer, M. Kerssemeeckers, R. Aalbers, H.R.J. Vollebergh, I. Ossokina, K. Blok)

### Scholarly publications

- Mahumane, G.M., P. Mulder (2021). *On the link between residential energy consumption and population density in Africa. Evidence from Mozambique*. Working Paper, under submission.
- Janssen, K., P. Mulder, M.H. Yudhistira (2021). Spatial Sorting of Rich versus Poor People in Jakarta. *Bulletin of Indonesian Economic Studies*, forthcoming.
- Díaz Lanchas, J., R.J.G.M. Florax, P. Mulder (2021). Does Decentralization of Governance Promote Urban Diversity? Evidence from Spain. *Regional Studies*, forthcoming.
- Fevriera, S., H.L.F. de Groot, P. Mulder (2020). Does Urban Form Affect Motorcycle Use? Evidence from Yogyakarta, Indonesia. *Bulletin of Indonesian Economic Studies*, May 4.
- Dobis, E.A., M.S. Delgado, R.J.G.M. Florax, P. Mulder (2020). Spatial Contagion, Hierarchy, and Population: American cities 1990-2010. *Journal of Economic Geography* 20, 397–418.
- Berenschot, W., P. Mulder (2019). Explaining regional variation in local governance: clientelism and state-dependency in Indonesia. *World Development* 122, 233-244.
- Kurniawan, H., H.L.F. de Groot, P. Mulder (2019). Are poor provinces catching-up the rich provinces in Indonesia?, *Regional Science, Policy and Practice* 11, 89-108.
- Mahumane, G.M., P. Mulder (2019). Expanding versus greening? Long-term energy and emission transitions in Mozambique, *Energy Policy* 126, 145-156.
- Bakens, J., H.L.F. de Groot, R.J.G.M. Florax, P. Mulder (2018). *Living Apart Together. The Economic Value of Ethnic Diversity in Cities*. Tinbergen Discussion Paper 18-029/VIII, Amsterdam/Rotterdam: Tinbergen Institute.
- Bakens, J., R.J.G.M. Florax, P. Mulder (2018). Ethnic Drift and White Flight: A Gravity Model of Neighborhood Formation, *Journal of Regional Science* 58, 921-948.
- Mahumane, G.M., P. Mulder (2016). Introducing MOZLEAP: an integrated long-run scenario model of the emerging energy sector of Mozambique, *Energy Economics* 59, 275-289.

- Wan, J., K. Baylis, P. Mulder (2015), Trade-Facilitated Technology Spillovers in Energy Productivity Convergence Processes across EU Countries, *Energy Economics* 48, 253–264.
- Mulder, P. (2015), International Specialization, Sector Structure and the Evolution of Manufacturing Energy Intensity in OECD Countries, *The Energy Journal* 36(3), 111-136.
- Mulder, P., H.L.F. de Groot, B. Pfeiffer (2014), Dynamics and determinants of energy intensity in the service sector: A cross-country analysis, 1980–2005, *Ecological Economics* 100, 1-15.
- Andadari, R.K., Mulder, P., P. Rietveld (2014), Energy poverty reduction by fuel switching. Impact evaluation of the LPG conversion program in Indonesia, *Energy Policy* 66, 436–449
- Pfeiffer, B., P. Mulder (2013), Explaining the Diffusion of Renewable Energy Technology in Developing Countries, *Energy Economics* 40, 285–296  
Reprinted in: Fouquet, R. (ed.), *Economics of Renewable Energy*, vol. 347 in The International Library of Critical Writings in Economics series. Cheltenham: Edward Elgar.
- Bakens, J., P. Mulder, P. Nijkamp (2013), Economic impacts of cultural diversity in The Netherlands: productivity, utility and sorting, *Journal of Regional Science* 53, 8-36.
- Mulder, P., H.L.F. de Groot (2013), Dutch Sectoral Energy Intensity Developments in International Perspective, 1987–2005, *Energy Policy* 52, 501-512
- Mulder, P., H.L.F. de Groot (2012), Structural Change and Convergence of Energy Intensity Across OECD Countries, 1970–2005, *Energy Economics* 34, 1910–1921
- Mulder, P., P. Nijkamp, R. Stough (2012), *Spatial Economic Analysis* 7 (3), 2012. Guest editor Special Issue: Modelling Innovation, Entrepreneurship and Regional Development.
- Florax, R.J.G.M., H.L.F. de Groot, P. Mulder (2011). *Improving Energy Efficiency through Technology: Trends, Investment Behaviour and Policy Design*, Cheltenham: Edward Elgar.
- Mulder, P., H.L.F. de Groot (2011), *Energy Intensity across Sectors and Countries: Empirical Evidence 1980–2005*, CPB Discussion Paper 171, The Hague: CPB Netherlands Bureau for Economic Policy Analysis.
- Bucuane, A.J., P. Mulder (2009), ‘Prospects for an Electricity Tax’, in: Arndt, C. and F. Tarp (eds.), *Taxation in a Low-Income Economy – The case of Mozambique*, 302-327. London/NewYork: Routledge.
- Bucuane, A.J., P. Mulder (2009), ‘Expanding exploitation of natural resources in Mozambique: Will it be a blessing or a curse?’, in: Brito, L. de, C. Castel-Branco, S. Chichava, A. Fransisco (eds.), *Reflecting on Economic Questions*, 104-153. Maputo: IESE.
- Mulder, P., J. Tembe (2008), Rural Electrification in an Imperfect World: A case study from Mozambique, *Energy Policy*, 36, 2785-2794.
- Mulder, P., H.L.F. de Groot (2007), Sectoral Energy- and Labour-Productivity Convergence, *Environmental and Resource Economics*, 36, 85–112.  
Reprinted in: L. Bretschger and S. Smulders (2007, eds), *Sustainable Resource Use and Economic Dynamics*, 165–190, Springer, Dordrecht.
- Miketa, A., P. Mulder (2005), Energy-Productivity Across Developed and Developing Countries in 10 Manufacturing Sectors: Patterns of Growth and Convergence, *Energy Economics* 27, 429-453.
- Mulder, P. (2005). *The Economics of Technology Diffusion and Energy Efficiency*. Cheltenham: Edward Elgar.
- De Groot, H.L.F., M.W. Hofkes, P. Mulder (2004), ‘A Vintage Model of Technology Diffusion: The effects of learning-by-doing and returns to diversity’, in: S. Brakman, B. Heijdra (eds), *The Monopolistic Competition Revolution in Retrospect*, 356-372. Cambridge: Cambridge University Press.
- Mulder, P., H.L.F. de Groot (2004), *Decoupling Economic Growth and Energy Use. An Empirical Cross-Country Analysis for 10 Manufacturing Sectors*, Tinbergen Discussion Paper 04-005/3, Amsterdam/Rotterdam: Tinbergen Institute.
- Mulder, P. (2004), NEMO: CPB’s energievraagmodel tussen top-down en bottom-up, *Kwartaalschrift Economie* 1, 131-153

- Mulder, P. H.L.F. de Groot, F.A.G. den Butter (2004). 'De Energie- en Arbeidsproductiviteit van Nederland in Internationaal Perspectief', in: H.R.J. Vollebergh, W. van Groenendaal, M.W. Hofkes and R. Kemp (eds), *Milieubeleid, Technologische Ontwikkeling en de Nederlandse Economie*, Den Haag, SDU, 101-125.
- De Groot, H.L.F., M.W. Hofkes, P. Mulder, J.A. Smulders (2004). 'Dynamiek van Technologie-ontwikkeling: Innovatie, Adoptie en Diffusie', in: H.R.J. Vollebergh, W. van Groenendaal, M.W. Hofkes, R. Kemp (eds), *Milieubeleid en Technologische Ontwikkeling in de Nederlandse Economie*, Den Haag, SDU, 45-63.
- Den Butter, F.A.G., H.L.F. de Groot, P. Mulder (2003), Energie en Arbeid: Vrienden of Vijanden?, *Economisch Statistische Berichten* 88, no.4407, 295-297
- Mulder, P., H.L.F. de Groot, M.W. Hofkes (2003), Explaining Slow Diffusion of Energy-Saving Technologies. A vintage model with returns to diversity and learning-by-using, *Resource and Energy Economics* 25, pp.105-126.
- De Groot, H.L.F., P. Mulder, D.P. van Soest (2002). *Subsidising the Adoption of Energy-Saving Technologies: Analyzing the Impact of Uncertainty, Learning and Maturation*, OCFEB Research Memorandum, no. 0201, Rotterdam: OCFEB.
- Mulder, P., J.C.J.M. van den Bergh (2001), Evolutionary Economic Theories of Sustainable Development, *Growth and Change* 32, pp.110-134.
- Reprinted in: Witt, U. (ed.), *Recent Developments In Evolutionary Economics*, vol. 228 in The International Library of Critical Writings in Economics series. Cheltenham: Edward Elgar.
- Mulder, P., H.L.F. de Groot, M.W. Hofkes (2001). Economic Growth and Technological Change. A comparison of insights from a neo-classical and evolutionary perspective, *Technological Forecasting and Social Change* 68, 151-171

### Other publications

- Van der Werf, G.R., G.C. van der Meijden, P. Mulder, (2019). *Klimaatverandering in je moerstaal*. VU Reader.
- De Groot, H.L.F. de, P. Mulder (2015), We moeten ons niet richten op de armen, maar op de middenklasse, *Parool* 27-08-2015, Opinion. [On the housing market in Amsterdam.]
- Bakens, J., H.L.F. de Groot, P. Mulder, C.J. Pen (2014). *Soort zoekt soort. Clustering en sociaal-economische scheidslijnen in Nederland*. Platform 31.
- Mulder, P. (2013), Book review D. Acemoglu en J. Robinson - Waarom sommige landen rijk zijn en andere arm, *Nederlands Dagblad* 22-03-2013
- Mulder, P. (2012), Book review T. Sedlacek - De economie van goed en kwaad, *Nederlands Dagblad* 23-10-2012
- Mulder, P. (2011), Book review D. Saunders - De trek naar de stad, *Nederlands Dagblad* maart 2011
- Mulder, P. (2010), Leve de markt, maar wel in de economie. *Nederlands Dagblad* 14-05-2010
- Mulder, P. (2010), *Co-referaat Groen van Prinstererlezing 2010 door Bob Goudzwaard*, in: Crisistijd, Wetenschappelijk Bureau ChristenUnie.
- Van de Kamp, L.J., P. Mulder (2009), Van de prins geen kwaad, *Volkskrant* 03-10-2009, Opinie. [On the purchase of a villa in Mozambique by the Dutch Crown Prince.]
- Mulder, P. (2008), Samaritanendom, *Radix* 34, 146-176. [On (dis)benefits of development aid]
- Mulder, P. (2002), Globalisering, of hoe meer mensen meer met elkaar te maken hebben, *Radix* 28, 159-168.
- Mulder, P., H.L.F. de Groot (2002). Leren Vereist Investeren, *ESB*, 85, no.4284, 980-982.
- De Groot, H.L.F., P. Mulder (2000). Leren, Weten en Vergeten, *ESB* 85, no.4270, 687.

### **Scholarly publications in progress**

- On the Urbanization of Energy Poverty. Evidence from Mozambique. (with G. Mahumane)
- Population Growth and the Trade-off between Green and Brown Expansion of Electricity Supply in Developing Countries. A Spatial Model and Evidence for Indonesia. (S. Fevriera and C. Bogmans)
- What Drives Electrification Inequality Across Time and Space in Indonesia? (with I.S. Rosidin)
- Power Density and Urbanization, 1800-2000. (with F. van de Poll)
- Transport Policies and Urban Air Pollution in Developing Countries. (with R. Borck)
- City Size Distribution and Inequality in Indonesia. (with I.S. Rosidin and H.L.F. de Groot)

### **Citations** (December 2020)

Web of Science: 714 (h-index=14); Google Scholar: 1885 (h-index=20, i10-index=30).

### **Research Interests**

Economics of energy transitions, cities and the spatial structure of economic development, energy use and urbanization, spatial inequality, role of institutions and governance in economic development.

### **Contributions to International Conferences**

- 2019 – Elsevier Conference on Energy Research and Social Science, Phoenix, USA
- 2018 – Sustainability and Development Conference, University of Michigan, Ann Arbor, USA
- 2018 – World Congress Regional Science International, Goa, India
- 2017 – Urban Economics Association / North American Regional Science Council, Vancouver, Canada
- 2016 – Urban Economics Association / North American Regional Science Council, Minneapolis, USA
- 2015 – Urban Economics Association / European Regional Science Association, Lissabon, Portugal
- 2014 – European Regional Science Association, St. Petersburg, Rusland
- 2013 – North American Regional Science Council, Atlanta, USA
- 2012 – International Energy Workshop, Kaapstad, Zuid-Afrika
- 2011 – North American Regional Science Council, Miami, USA
- 2011 – European Regional Science Association, Barcelona, Spanje
- 2010 – International Energy Workshop, Stockholm, Zweden
- 2010 – WIOD Conference ‘Industry-Level Analyses of Globalization and its Consequences’, Wenen, Oostenrijk
- 2009 – North American Regional Science Council, San Fransisco, USA
- 2008 – Stanford Energy Modeling Forum, Working Group 25, Washington DC, USA
- 2006 – International Energy Workshop, Kaapstad, Zuid-Afrika
- 2004 – Annual Congress of the European Regional Science Association, Porto, Portugal
- 2004 – Monte Verità Conference on Sustainable Resource Use and Economic Dynamics, Ascona, Zwitserland,
- 2003 – International Energy Workshop, IIASA, Laxenburg, Oostenrijk
- 2002 – 2nd World Congress of Environmental and Resource Economists, Monterey, USA
- 2002 – International Energy Workshop, Stanford University, USA
- 2001 – Congress of the European Association of Environmental and Resource Economists, Southampton, UK
- 2000 – KNAW Workshop ‘Economic Modelling of Environmental Policy and Endogenous Technological Change’, Amsterdam
- 2000 – International Energy Workshop, Stanford University, USA
- 1999 – Workshop ‘Endogenous Growth Policy and Regional Development’, Tinbergen Instituut Amsterdam

## **Reviewer academic journals**

Amongst others: Applied Energy, Ecological Economics, Economics Bulletin, Energy Journal, Energy Economics, Energy Research and Social Science, Energy Policy, Environmental Research Letters, Journal of Economic Growth, Journal of Economic Geography, Journal of Environmental Economics and Management, Journal of Regional Science, Papers in Regional Science, Journal of Regional Science and Urban Economics, Resource and Energy Economics, Spatial Economic Analysis, World Development

## **PhD students**

Advisor: Isfandiarni S. Rosidin – Inequality, Regional Development and Access to Public Services in Indonesia (spring 2021)  
Gilberto Mahumane – Promises and Perils of Energy Transitions in Mozambique (13-01-2021)  
Sotya Fevreira – Environmental Challenges of Economic Development in Indonesia (15-09-2020)  
Jessie Bakens – Economic Impacts of Immigrants and Ethnic Diversity on Cities (09-09-2016)

Committee: Haroon Sheikh – Embedding Technopolis (2012, VU Amsterdam),  
Elizabeth Dobis – The Evolution of the American Urban System: History, Hierarchy and Contagion (2017, Purdue University, USA)

## **Grants**

### *Awarded*

2020 TNO  
Energy Transition Ideation Challenge  
2016 NWO / ERA-NET Cofund Smart Cities and Communities (ENSCC)  
Urban form, location choice and transport solutions for low-carbon cities.  
2013 KNAW – SPIN  
Local and Regional dimensions in Indonesia's social and economic development; a governance approach.  
2003 NWO Grant Research Fellowship IIASA (6 months)

### *Rejected*

2016 NWO-ORA:  
Energy use and the spatial structure of the economic system in developing countries.  
2015 ERC Consolidator Grant 2015 (final round)  
Energy use, urbanization and the spatial structure of economic development in Africa.  
2008 NWO-VIDI  
Economic Interaction in a Globalizing World. The role of institutions, culture, and transnational networks.

## **Volunteering**

Co-founder and chairman of the board of 'Present Amsterdam' (2005, 2008-2013) and co-founder of 'Burennetwerk' (2012). Both are charitable organizations in Amsterdam that connect people who want to help with people who could use some extra help.

Volunteer at community center room Bloemenbuurt, Amsterdam Noord.

Co-founder and chairman of the board of 'Hart voor Noord' (since 2019), a non-profit organization that supports people in Amsterdam Noord to rise out of poverty and loneliness - by listening, helping and building together resilient communities ([www.hartvoornoord.nl](http://www.hartvoornoord.nl)).