



Émile Chappin

Postdoc in Simulations of Energy Infrastructure Systems

Education

- 2007–2011 **PhD**, *Delft University of Technology*, Delft.
- 2004–2006 **Master of Science**, *Delft University of Technology*, Delft.
Systems Engineering, Policy Analysis and Management, Energy Track
- 2001–2004 **Bachelor of Science**, *Delft University of Technology*, Delft.
Systems Engineering, Policy Analysis and Management, Energy & Industry Track
- 1995–2001 **Pre-university education (V.W.O.)**, *Oranje Nassau College*, Zoetermeer.
Final exams in Mathematics, Statistics, Physics, Chemistry, Biology, Business Economics, Dutch, English, and German

PhD thesis

- title *Simulating Energy Transitions*
- institute Delft University of Technology
- promotors Prof. dr. ir. M.P.C. Weijnen and dr. ir. G.P.J. Dijkema (co-promotor)
- description By developing a modelling framework and a agent-based models of energy systems of the power supply infrastructure, the consumer lighting system, and the global market for LNG, the potential for the management of energy transitions is explored [3] (digitally available at <http://chappin.com/ChappinEJL-PhDthesis.pdf>). The thesis has been defended on 16 June 2011.

Master thesis

- title *Carbon Dioxide Emission Trade Impact on Power Generation Portfolio – Agent-based Modelling to Elucidate Influences of Emission Trading on Investments in Dutch Electricity Generation*
- institute Delft University of Technology
- description An agent-based model was developed of the power generation system. In the project, the impact of CO₂ emissions trading on long-term emissions by power generation was explored [2].

Bachelor thesis

- title *Transition to a hydrogen economy*
- institute Delft University of Technology

description A model for hydrogen acceptance, quantitative causal analysis of factors that influence social acceptance of hydrogen as a major energy carrier in society [1].

Experience

- 2012–Present **Visiting researcher**, *Wuppertal Institute*, Wuppertal.
Projects: Integration of renewables in a long-term Agent-Based Model of the power sector.
- 2011–Present **Postdoc**, *Energy & Industry Section, Faculty of Technology, Policy and Management, Delft University of Technology*, Delft.
Projects: Decarbonizing the power sector, Adaptation to Climate Change, EDGaR, Electricity Market Game.
- 2007–2011 **PhD Candidate**, *Energy & Industry Section, Faculty of Technology, Policy and Management, Delft University of Technology*, Delft.
PhD project titled: *Simulations of Energy Transitions* [3].
- 2007 **Researcher**, *Centre for Environmental Sciences, Leiden University*, Leiden.
Project commissioned by SenterNovem, developing a calculator tool for life-cycle greenhouse gas emissions of chains generating electricity from biomass.
- 2004 **Internship**, *Delft University of Technology*, Delft.
The transport of hydrogen; conceptual and quantitative analysis to compare the use of different transport modalities for transporting hydrogen [35].
- 2002–2006 **Student Assistant**, *Delft University of Technology*, Delft.
Activities included production and maintenance of course sheets, creation and correction of written exams, writing lecture notes, the selection of literature for readers, master and produce websites for courses on Policy, Economics and Law for Energy, Water and Industry, Introduction to Energy, Water and Industry and Introduction to Systems Engineering, Policy Analysis and Management [49].

Teaching

Postgraduate level

- 2010 **33rd IAEE conference on Energy Economics**, *IAEE*, Rio de Janeiro.
Electricity Market Game Workshop
- 2009–present **NGI**nfra Academy (Energy Track)****, *NGI**nfra Foundation***.
Track manager, lecturer, game facilitator
- 2009–2010 **Professional training**, *TopTech*, Utrecht, Delft.
Lectures and trainings for CapGemini and Energy professionals

MSc level

- 2009–present **Multivariate modeling**, *Delft University of Technology*, Delft.
Working classes, sporadically lectures
- 2009–present **Research methods for data analysis**, *Delft University of Technology*, Delft.
Working classes, sporadically lectures
- 2007–2009 **Research methods and data analysis**, *Delft University of Technology*, Delft.
Working classes, lectures ('07-'08), module manager ('07-'08)

BSc level

- 2012–present **Policy, economy and law on the energy and industry domain**, *Delft University of Technology*, Delft.
Lectures and working classes on the interaction of the CO₂ market and power market
- 2010–present **Systems in energy, water and industry part I**, *Delft University of Technology*, Delft.
Working classes
- 2010–present **Systems in energy, water and industry part II**, *Delft University of Technology*, Delft.
Working classes
- 2010–present **Life Cycle Modeling and Economic Evaluation**, *Delft University of Technology*, Delft.
Lectures on Life Cycle Analysis

Selection of extracurricular activities

- 2012–present **Special Interest Group leader**, *European Social Simulation Association*.
Special Interest Group on societal transitions
- 2012 **Keynote speech**, *KIVI NIRIA Symposium: Integrated Product Development Projects*, Eindhoven.
The Energy Transition: Managing complex infrastructure systems
- 2011 **Pianist**, *SprinterSingers*, Zoetermeer.
- 2011 **Teacher, musical leader, pianist**, *Centrum voor Kunst en Cultuur*, Zoetermeer.
See <http://ckc-zoetermeer.nl>
- 2010–present **Columnist**, *Het Financieele Dagblad (Dutch Financial Times)*.
Montly column FD (<http://fd.nl>, in Dutch)
- 2010 **Media training**, *Presentatiegroep*, Bloemendaal.
Media and presentation training
- 2010 **Speech**, *Institute of Environmental Systems Research, University of Osnabrück*, Osnabrück, Germany.
Speech, titled 'Simulations of energy transitions'
- 2010 **Academic hour**, *Ministry of Economic Affairs*, The Hague.
Speech 'Energy transition – Towards a CO₂-extensive power generation system'
- 2009–present **Founder and organizing chair**, *Musical Day*, Zoetermeer.
A series of full-day musical-oriented events to promote the performing arts, see <http://musicalday.nl>.
- 2008–present **Pianist**, *Haagsch Ad Hoc*, The Hague.
Accompanying singers with as specialty popular and jazz music
- 2007–2008 **Module manager**, *Delft University of Technology*, Delft.
MSc level course on research methods and data analysis
- 2007–present **Supervising various BSc and Msc theses**, *Delft University of Technology*.
- 2006–present **Presentations in the scientific community**.
Scientific presentations on a variety of international conferences (e.g. ESM, IAEE, ESSA, WCCS, ICTPI)
- 2006–present **Pianist, alternate conductor**, *Musical and Pop Choir Delft*, Delft.
- 2006 **Musical Director**, *Mavelle Corporation*, Zoetermeer.
- 2004–2008 **Musical director and composer**, *Reflectie Theater Association*, Zoetermeer.

- 2001–2004 **Employee**, *Public Library*, Zoetermeer.
Tasks at several departments, including the logistics department and the media department, processing several types of media, providing technical facilities and helping costumers.
- 2001–2003 **Chairman and Treasurer**, *Catholic Youth Association WESP*, Zoetermeer.
- 1999–present **Founder, chairman, musical director, conductor and project leader**, *Theaterorkest.nl Foundation*, Zoetermeer.
See <http://theaterorkest.nl>

Languages

English **Fluent**
Dutch **Native**

Computer skills

Operating Systems	MS Windows, Linux	Tasks	Server administration and maintainance
Software	Office, Matlab, Maple, Cycle-Tempo, Arena, Powersim, Eclipse, Protégé, SPSS, latex	Languages	Java, Visual Basic, PHP, HTML, JSP

Interests

Music Playing piano, guitar, bass, drums, and saxophone; Composing and arranging music; Accompanying and participating in choirs, orchestras, and bands focusing on modern music

Literature Writing poetry and short stories, reading

Multimedia Computers, developing websites, radio plays, photography, and movies

Publications

Theses

- [1] E. J. L. Chappin. *Een model voor waterstofacceptatie – Een causale analyse van de factoren die de maatschappelijke acceptatie van waterstof beïnvloeden*. Delft University of Technology, Delft, 2004.
- [2] E. J. L. Chappin. Carbon Dioxide Emission Trade Impact on Power Generation Portfolio – Agent-based Modelling to Elucidate Influences of Emission Trading on Investments in Dutch Electricity Generation. Master's thesis, Delft University of Technology, Delft, the Netherlands, 2006.
- [3] Emile J. L. Chappin. *Simulating Energy Transitions*. PhD thesis, Delft University of Technology, Delft, the Netherlands, 2011. ISBN: 978-90-79787-30-2.

Journal articles

- [4] E. J. L. Chappin and G. P. J. Dijkema. On the impact of CO₂ emission-trading on power generation emissions. *Technological Forecasting & Social Change*, 76(3):358–370, 2009.
- [5] E. J. L. Chappin and G. P. J. Dijkema. Agent-based modeling of energy infrastructure transitions. *International Journal of Critical Infrastructures*, 6(2):106–130, 2010.

Book chapters

- [6] E. J. L. Chappin and Maarten R. Afman. Agent-based model of consumer lighting. In Koen H. van Dam, Igor Nikolic, and Zofia Lukszo, editors, *Agent-Based Modelling of Socio-Technical Systems*, chapter 7. Elsevier, 2011.
- [7] E. J. L. Chappin and G. P. J. Dijkema. Transition management in energy: Design and evaluate transitions with a suitable simulation framework. In Marina van Geenhuizen, W. J. Nuttall, David Gibson, and Elin Oftedal, editors, *Energy and Innovation: Structural Change and Policy Implications*, International Series on Technology Policy and Innovation. Purdue University Press, 2010. ISBN 978-1-55753-578-8.
- [8] E. J. L. Chappin, G. P. J. Dijkema, and L. J. de Vries. Carbon policies: Do they deliver in the long run? In P. Sioshansi, editor, *Carbon Constrained: Future of Electricity*, Global Energy Policy and Economic Series, pages 31–56. Elsevier, 2010. ISBN: 978-1-85617-655-2.
- [9] Emile J. L. Chappin and G. P. J. Dijkema. Agent-based model of CO₂ policies and electricity generation. In Koen H. van Dam, Igor Nikolic, and Zofia Lukszo, editors, *Agent-Based Modelling of Socio-Technical Systems*, chapter 8. Elsevier, 2011.
- [10] Georg Holtz, Joost Vervoort, Emile Chappin, and Sharad Karmacharya. Challenges and opportunities in transition modelling. In *Modelling system innovations in coupled human-technology-environment systems*. University of Osnabrück, Osnabrück, Germany, 2010.

Conference papers

- [11] Maarten R. Afman, Emile J. L. Chappin, Wander Jager, and Gerard P. J. Dijkema. Agent-based model of transitions in consumer lighting. In *3rd World Congress on Social Simulation: Scientific Advances in Understanding Societal Processes and Dynamics*, Kassel, Germany, September 6–9 2010. University of Kassel and Center for Environmental Systems Research.
- [12] M. Cepeda, , E. J. L. Chappin, and L. J. de Vries. Enhancing generation adequacy in regional electricity markets: the effectiveness of the forward capacity mechanism vs. the energy-only approach. In *33st IAEE International Conference, The Future of Energy: Global Challenges, Diverse Solutions*, InterContinental Rio Hotel, Rio de Janeiro, Brazil, June 6–9, 2010 2010. IAEE.
- [13] E. J. L. Chappin. Emission-trading as transition instrument for emission reductions? In John P. M. Groenewegen, Theo Fens, Jean-François Auger, and Klara Paardenkooper-Suli, editors, *11th Annual International Conference on the Economics of Infrastructures*, Delft, 2008. Delft University of Technology.
- [14] E. J. L. Chappin and G. P. J. Dijkema. An agent based model of the system of electricity production systems: Exploring the impact of CO₂ emission-trading. In *IEEE SoSE: Systems of Systems Engineering*, San Antonio, Texas, USA, 2007. IEEE.
- [15] E. J. L. Chappin and G. P. J. Dijkema. On the impact of CO₂ emission-trading on power generation emissions. In *10th International Conference on Technology Policy and Innovation*, Stavanger, Norway, June 17–20, 2007 2007. ICTPI.
- [16] E. J. L. Chappin and G. P. J. Dijkema. Agent-based modeling of energy infrastructure transitions. In *International Conference on Infrastructure Systems – Building Networks for a Brighter Future*, Rotterdam, The Netherlands, 2008. NGInfra.
- [17] E. J. L. Chappin and G. P. J. Dijkema. On the design of system transitions – is transition management in the energy domain feasible? In *IEEE IEMC: International Engineering Management Conference*, Estoril, Portugal, 2008. IEEE.
- [18] E. J. L. Chappin and G. P. J. Dijkema. Towards the assessment of policy impacts on system transitions in energy. In *31st IAEE International Conference, Bridging Energy Supply and Demand: Logistics, Competition and Environment*, Istanbul, Turkey, 2008. IAEE.

- [19] E. J. L. Chappin and G. P. J. Dijkema. Towards simulation of transitions in energy. In *Industrial Ecology Conference Transitions Toward Sustainability*, Lisboa, Portugal, 21–24 June 2009 2009.
- [20] E. J. L. Chappin and G. P. J. Dijkema. Agent-based simulations of energy transitions. In *6th International Conference on Industrial Ecology, Science, Systems, and Sustainability*, University of California, Berkeley, California, June 7–10, 2011 2011. ISIE.
- [21] E. J. L. Chappin, G. P. J. Dijkema, K. H. van Dam, and Z. Lukszo. Modeling strategic and operational decision-making – an agent-based model of electricity producers. In Jaroslav Sklenar, Alain Tanguy, Cyrille Bertelle, and Giancarlo Fortino, editors, *The 2007 European Simulation and Modelling Conference*, St. Julians, Malta, 2007. Eurosis.
- [22] E. J. L. Chappin, G. P. J. Dijkema, and L. J. de Vries. Agent-based simulation of carbon policies and power generation. In *32st IAEE International Conference, Energy, Economy, Environment: The Global View*, San Fransisco, USA, 2009. IAEE.
- [23] E. J. L. Chappin and P. W. Heijnen. Analyzing simulations of energy transitions: Towards a dynamic path approach. In *6th Conference of The European Social Simulation Association*, Guildford, UK, 2009. ESSA.
- [24] E. J. L. Chappin, R. Praet, and G. P. J. Dijkema. Transition in LNG markets – combining agent-based modeling and equation based modeling. In *33st IAEE International Conference, The Future of Energy: Global Challenges, Diverse Solutions*, InterContinental Rio Hotel, Rio de Janeiro, Brazil, June 6–9, 2010 2010. IAEE.
- [25] Emile Chappin. De juiste sprong in het diepe. *Energie+*, 2011(2), 2011.
- [26] C. M. Chiong Meza and E. J. L. Chappin. Modelling energy infrastructures: Where transition theory meets agent-based modelling. In *5th Conference of The European Social Simulation Association*, Brescia, Italy, 2008. ESSA.
- [27] Catherine Chiong Meza, Emile J. L. Chappin, and Gerard P. J. Dijkema. Transition of energy infrastructure systems: Towards a framework for assessing the system transition process. In *International Conference on Infrastructure Systems – Building Networks for a Brighter Future*, Rotterdam, The Netherlands, 2008. NGInfra Foundation.
- [28] L. J. de Vries and E. J. L. Chappin. Power play: simulating the interrelations between an electricity market and a CO₂ market in an on-line game. In *33st IAEE International Conference, The Future of Energy: Global Challenges, Diverse Solutions*, InterContinental Rio Hotel, Rio de Janeiro, Brazil, June 6–9, 2010 2010. IAEE.
- [29] L. J. de Vries, E. Subramahnan, and E. J. L. Chappin. Power games: using an electricity market simulation game to convey research results. In *Proceedings of the second International Conference on Infrastructure Systems 2009 (INFRA 2009): Developing 21st Century Infrastructure Networks*, Chennai, India, 9–11 December 2009.
- [30] Andreas Ligtoet, Emile J. L. Chappin, and Rob M. Stikkelman. Modelling cooperation in infrastructure networks. In *3rd World Congress on Social Simulation: Scientific Advances in Understanding Societal Processes and Dynamics*, Kassel, Germany, September 6–9 2010. University of Kassel and Center for Environmental Systems Research.
- [31] Andreas Ligtoet, Amineh Ghorbani, and Emile J. L. Chappin. A methodology for agent-based modelling using institutional analysis – applied to consumer lighting. In *Agent Technologies for Energy Systems Workshop at AAMAS 2011 (ATES 2011)*, Taipei, Taiwan, 2nd May 2011 2011.
- [32] Igor Nikolic, Emile J. L. Chappin, Chris Davis, and Gerard P. J. Dijkema. On the development of agent-based models for infrastructure evolution. In *International Conference on Infrastructure Systems – Building Networks for a Brighter Future*, Rotterdam, The Netherlands, November 2008. NGInfra Foundation.
- [33] Igor Nikolic, Gerard P. J. Dijkema, Emile Chappin, and Chris Davis. Model based decision support for creation and operation of sustainable infrastructure. In *2009 IEEE International Conference on Systems, Man, and Cybernetics*, Hyatt Regency Riverwalk, San Antonio, Texas, USA., October 11–14 2009.

- [34] K. H. van Dam and E. J. L. Chappin. Coupling agent-based models of natural gas and electricity markets. In *First International Workshop on Agent Technologies for Energy Systems (ATES 2010)*, Toronto, Canada, 11th May 2010.

Newspaper articles and columns, technical reports, and other publications

- [35] C. C. Cantarelli, E. J. L. Chappin, and A. M. Klompenhouwer. *Onderzoek naar waterstoftransport – Eindrapportage*. Delft University of Technology, Delft, 2004.
- [36] E. J. L. Chappin. Review of: From system complexity to emergent properties (understanding complex systems), aziz-alaoui, m.a. and bertelle, c. (eds.), January 2010. Book Review.
- [37] E. J. L. Chappin, L. J. de Vries, and G. P. J. Dijkema. Co2 compenseren of reduceren? *FD Selections*, 13 mei, 2011.
- [38] E. J. L. Chappin, L. J. de Vries, and G. P. J. Dijkema. Klimaat: van hoax naar actie. *FD Selections*, 11 februari, 2011.
- [39] E. J. L. Chappin and G. P. J. Dijkema. An agent based model to study the impact of CO₂ emission-trading on electric power generation. In *Industrial Ecology Conference*, Toronto, Canada, June 17th – 20th 2007. ISIE.
- [40] E. J. L. Chappin and G. P. J. Dijkema. Emissiehandel raakt kolencentrales niet. *Financieel Dagblad*, July 7:7, 2007.
- [41] E. J. L. Chappin and G. P. J. Dijkema. Design of simulation models of energy transition management. In *Delft Design & Engineering Day 2009 – Discover the latest inventions of the TU Delft*, Faculty of Architecture, Julianalaan 134, Delft, November 5th 2009.
- [42] E. J. L. Chappin, G. P. J. Dijkema, and R. M. Stikkelman. Emissiehandel leidt niet tot lagere CO₂-uitstoot. *TBM Quarterly*, 4(1):3, 2008.
- [43] Emile Chappin. Simulating energy transitions. *Mother Pelican*, 7(8):6, 2011.
- [44] Emile Chappin. Simulating energy transitions. *EDI Quarterly*, 3(2):7–9, June 2011.
- [45] Emile J. L. Chappin. No drop in CO₂ emissions despite emission trading (ondanks emissiehandel geen lagere CO₂-uitstoot). *TPM In Focus (TBM In Beeld)*, page 19, 2008.
- [46] Emile J. L. Chappin, Gerard P. J. Dijkema, and Laurens J. de Vries. Europe's Flawed Carbon-Trading System. *Wall Street Journal*, July 15:6, 2010.
- [47] L. J. de Vries, G. P. J. Dijkema, and E. J. L. Chappin. Marktwerking in transitie. *FD Selections*, 9 december, 2010.
- [48] L. J. de Vries, G. P. J. Dijkema, and E. J. L. Chappin. De paradox van de energietransitie. *FD Selections*, 10 maart, 2011.
- [49] G. P. J. Dijkema and E. J. L. Chappin. *Systemen in de Industrie, Water- en Energiesector*. TBM TU Delft, Delft, 2003.
- [50] G. P. J. Dijkema, E. J. L. Chappin, and L. J. de Vries. Stop de offshoring van wind. *FD Selections*, 13 januari, 2011.
- [51] G. P. J. Dijkema, E. J. L. Chappin, and L. J. de Vries. Zonder olie staat alles (niet) stil. *FD Selections*, 7 april, 2011.
- [52] E. van der Voet, J. B. Guinnée, C. Davis, L. van Oers, R. Nelis, B. Cok, E. J. L. Chappin, and R. Heijungs. *Greenhouse Gas Calculator for Electricity and Heat from Biomass*. CML, Leiden, 2007.