

Antoine Mandel

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PERSONAL INFORMATION

Born November the 30th 1980. Married, 3 children.

EDUCATION

- 2016 Habilitation "Essays on Economic Dynamics", University Paris 1.
Committee: S. Battiston, J-M. Bonnisseau, J-P. Bouchaud, H. Dawid, C. Jaeger, A. Kirman, A. Rusinowska.
- 2007 Ph.D. in Mathematical Economics, University Paris 1.
Committee: J-M. Bonnisseau, A. Chateauneuf, B. Cornet, B. Crettez, M. Czarnecki, M. de Lara, E. Jouini.
- 2004 Master in Applied Mathematics, University Paris 1 Panthéon-Sorbonne.

EMPLOYMENT

- 2019- Co-Founder and Senior Partner, Climate Finance Alpha (CLIMAFIN).
- 2017- Full Professor of Applied Mathematics, University Paris 1 Panthéon-Sorbonne (part-time since 2023)
- 2012- Research fellow, Paris School of Economics.
- 2012-2013 Secondment at the CNRS.
- 2009-2016 Maître de conférences (Ass. Prof) in Applied Mathematics, University Paris 1.
- 2007-2009 Post-doctoral fellow at the Potsdam Institute for climate impact research (PIK).
- 2004-2007 Doctoral fellow, Centre d'Economie de la Sorbonne.

DEPARTMENT AND UNIVERSITY SERVICE

- 2018- Vice-dean of the department of mathematics and computer science, University Paris 1
- 2019- Member of the scientific steering committee of the UNA-Europa European university
- 2011- Director of studies for the double-bachelor in mathematics and social science in partnership with Sciences-Po Paris.
- 2019- Member of the board of the "Centre d'économie de la Sorbonne"
- 2015- Member of the board of the doctoral school in Economics, University Paris 1/EHESS.
- 2009- Member of the board of the department of Applied Mathematics

GRANTS AND AWARDS¹

- 2024 Distinguished visiting scholar, Indian Institute of Management, Khozikode.
- 2024-2027 Unit Leader Horizon Europe project “ST4TE: Strategies for just and equitable transitions in Europe.” (300k€)
- 2022-2025 Unit Leader Horizon EU project “DECIPHER: Decision-making framework and processes for holistic evaluation of environmental and climate policies.” (300k€)
- 2021-2024 Unit Leader H2020 project “EPOC: Economic Policy in Complex Environments” (350k€)
- 2020-2023 Unit/WP Leader H2020 project “TIPPING+: Tipping Points towards clean-energy Transitions” (200k€)
- 2019-2020 Co-PI Inspire project on climate finance, Climate Works foundation (25k€)
- 2019-2020 Co-PI H2020 project “CLIMEX: Climate Exposure Tool for Financial Risk Analysis” (100 k€)
- 2017-2020 Co-PI H2020 project “EXSIDE: Expectations and Social Influence Dynamics in Economics (350k€)
- 2016-2018 Co-PI of the University Paris 1 interdisciplinary project “Mathematical Modeling and Artistic transformation of empirical data”, with Yann Toma (20 k€).
- 2015-2018 Unit/WP leader H2020 project “GREENWIN: Green growth and win-win strategies for climate action” (300 k€)
- 2015-2018 Unit leader H2020 project “DOLFINS: Distributed Global Financial Systems for Society” (250 k€)
- 2015-2016 Grant of the Alliance program (Columbia University/University Paris 1) and of the “Ile-de-France” Regional council for the conference “social dynamics and Climate Change” and the exhibition “The climate meridian” (20 k€).
- 2013- Scientific Excellence Award, University Paris 1
- 2013-2018 Unit leader FP7 project “IMPRESSIONS: Impacts and risks from higher-end Scenarios” (200 k€).
- 2013-2017 Unit/WP leader FP7 project “SIMPOL: Financial Systems Simulations and Policy Modeling” (300 k€).
- 2012-2014 Grant of the Institute for New Economic Thinking for the project “Analytical aspects of real-financial linkages in systems of heterogeneous agents,” with H. Gintis, S. Landini and M. Gallegati (150k\$).
- 2010-2013 Unit/WP leader FP7 project “Global System Dynamics and Policy” (100k€).
- 2010-2011 Co-PI project “A new growth path for Europe” for the German ministry of the environment (30k€).

DOCTORAL AND POST-DOCTORAL SUPERVISION

¹ Values reported between brackets correspond to own funding received.

Post-doctoral fellows: Solmaria Halleck-Vega (2016-2018), Amir Sani (2015-2017), Tomas Balint (2014-2017), Andreas Karpf (2013-2016), Vipin Veetil (2017-2019), Géraldine Bouveret (2019), Saptorshee Chakraborty (2020-)

Doctoral Fellows: Pascal Assmuth (2011-2015), Kerstin Hötte (2017-2020), Alessandro de Sanctis (2017-2021), Alexandre Cornet (2017-2020), Fernando Garcia Alvarado (2017-20), Emmanuel Bovari (2017-2020), Nurten Kaynarca (2021-), Amina Azaiez (2021-), Miquel Bassart y Loré (2021-), Giacomo Gallegati (2023-)

Doctoral Committees: Fanny Cartelier (Institut Polytechnique Paris, 2024), Karl Naumann-Woleske (Institut Polytechnique Paris, 2024), Jeremy Assael (Université Paris-Saclay, 2023), Theo Le Guenedal (Institut Polytechnique de Paris, 2023) Federico Morelli (Sorbonne University, 2021), Anis Nassar (U. Firbourg, 2021), Luca Colombo (HDR, Paris 1, 2020), Paola Labrecciosa (HDR, Paris 1, 2020), Jose Moran (EHESS, 2020), Alexis Poindron (Paris1, 2020), Raffaele Giammetti (UP Ancona, 2018), Dan Tran (University of Bordeaux, 2019), Celian Colon (Ecole Polytechnique, 2016), Francesco Lamperti (SSSA Pisa, 2016), Amir Sani (Inria Lille, 2015), Tania Treibich (Univ. Nice, 2013).

COURSES TAUGHT (Last five years)

Foundations of Mathematics (Bachelor 2015-)
Advanced Microeconomics (Master 2017-)
Economic and Financial Networks (Master 2018-)
Sustainable Finance (Doctorate 2019, 2020)
Optimisation (Master, 2015-2019)

EDITORIAL AND SCIENTIFIC RESPONSABILITIES

2023- Member of the scientific committee, foundation “Paris Agreement Research commons”
2019- Associate editor, Journal of Economic Dynamics and Control
2019- Member of the steering committee of the Alliance Program Initiative on Climate Change
2015- Member of the scientific committee of the WEHIA conference
2012- Expert evaluator for the European Commission (FET program), Belgian Research Agency, German ministry of Research, French Research Agency, Italian Research Agency, Fondazione Carilpo.
2009- Referee for Annals of Operations Research, Climate Policy, Climatic Change, Ecology and Society, Economic Bulletin, European Journal of Operational Research, Games and Economic Behavior, Industrial and Corporate Change, International journal of game theory, Journal of Economic Behavior and Organization, Journal of Economic Dynamics and Control (excellence in refereeing award), Journal of Environmental Economics and Management, Journal of Evolutionary Economics, Journal of Economic Interaction and Coordination, Journal of Economic Theory, Journal of Mathematical Economics, Journal of Population Economics, Journal of Public Economics, Macroeconomic Dynamics, Mathematics of Operations Research, NIPS 2016, PLOS one, Scandinavian Journal of Economics, Studies in Nonlinear Dynamics and Econometrics.

ORGANIZATION OF CONFERENCES

I have organized a large number of workshops and conferences since 2010. In particular, in the context of the COP21, I have led the organization of a joint conference and exhibition on “social dynamics and climate change”, which has received the official COP 21 label from the French government.

2023 Workshop agent-based modelling and complexity economics, Annual conference of the Society for the Advancement of economic Theory.

2022 Spring School ‘Networks and Systemic Risks”, University Paris 1. 8th Euro-African Conference on Finance and Economics (scientific committee), Porto University.

2019 Workop "A data driven approach to the costs of climate change", Paris School of Economics, University Paris 1

2018 Workop "Computational Approaches to games and decisions, Paris School of Economics, University Paris 1

2017 Colloque "art et mathématiques", Université Paris 1

2017 Workshop on Production Networks, University Paris 1

2016 Second General Assembly of the GREENWIN project, Fondation Royaumont.

2016 Satellite Workshop of StatPhys26, “Statistical Physics of Financial and Economic Networks”, University Paris 1.

2016 Second General Assembly of the IMPRESSIONS project, Villa Finaly, Florence.

2015 Conference “Social Dynamics and Climate Change”, University Paris 1.

2015 Exhibition “The climate meridian”, University Paris 1.

2015 MAGECO workshop on agent-based modelling, EHESS.

2014 Workshop “Towards a research agenda for Policy-Making Challenges after 2008”, University Paris 1.

2013 Workshop “Uncertainty, Digital Science and the Long Term”, Villa Finaly, Florence.

2013 Second open Global Systems Science Conference, Brussels.

2012 First open Global Systems Science Conference, Brussels.

2012 WEHIA “Workshop on Economics with Heterogeneous Interacting Agents”, University Paris 1 and 2.

2012 Global systems as networks of networks, Villa Finaly, Florence

2011 GSDP Paris Agent-Based Modelling workshop, University Paris 1.

2011 Spain-Italy-Netherlands Meeting on Game Theory, University Paris 1 (local organizing committee)

2010 Third Euro-African conference in economics and finance, University Paris 1 (local organizing committee)

INVITED CONFERENCES AND SEMINARS²:

2024: Workshop on firm-level supply networks (CSH Vienna), International workshop on climate finance (IIM Khozicode, India), Summer Workshop in Economic Theory (Venice)

2023: Negoclim workshop (Sorbonne University), DG ECHO Summer School on “Evidence for Policy in Disaster Risk Management, Eu Tax Observatory (Paris School of Economics), Seminar Scuola Sant’Anna Pisa, Workshop on Social Tipping Points

² Contributions to regular conferences are not listed here.

(Scuola Normale Pisa), Workshop on novel economic modelling approaches to assess climate & energy policies (Bruegel), Seminar Queen Mary University (London), Workshop on networks of agents (BASE University, Bangalore, India, online).

- 2022: Workshop on firm-level production networks (U. Vienna), ACPR Chair Seminar (Banque de France), Workshop on Climate change, finance, risk and uncertainty modelling (Polytechnique, Paris), EU Tax Observatory lunch seminar (Paris School of Economics), Sustainability Transition Seminar (Neoma Business School), French association for asset-liability management (AGFAP), Workshop on Economics and Management in the Era of Data Science (Scuola Sant'Anna Pisa).
- 2021: NGFS-GRASFI-INSPIRE Webinar, EHESS Complex Systems Seminar,
- 2020: Sustainable Finance Conference (University of Zürich), Cours Bachelier (IHP Paris) Labex Dynamite Seminar, Queen Mary university London Seminar, Workshop Coupled climate-ecology-economy modeling and model hierarchies IFP Paris, UNEP-FI seminar.
- 2019 Annual conference, Europlace Finance Institute (Paris), IHP semester on mathematics and the environment, Seminaire Fime PSL, Conference "Global warming, society and responsibility" (College de France, Paris) 2nd Conference on "Globalization; contents and discontents" (World Bank, Kuala Lumpur)
- 2018 Seminar CIRED (CNRS), Green Finance Summit (University of Liechtenstein).
- 2017 First Conference on Financial Networks and Sustainability (University of Zurich), Seminar University of Metz, Seminar Georges Mason University, Seminar University of Bielefeld, Environmental Risk Analysis Workshop Beijing, Summer Workshop in Economic Theory Paris.
- 2016 Seminar University of Nanterre, Conference on System Science and Policy at King's college London, Seminar at Scuola Sant'Anna Pisa, Seminar at Paris Institute for Advanced Studies, Workshop on Complexity Economics at University of Nice.
- 2015 Workshop on information transmission in networks at Harvard University, EuRuCAS Climate Policy Modelling workshop at NIERSC-Saint Petersburg, Summer School of the 2015 Wehia conference at University of Nice, ISIGROWTH workshop at university Cattolica of Milano,
- 2014 OECD-ECLAC workshop "New tools for policy-making" at OECD-Paris, Mageco workshop at Paris 6 University, Global Climate Forum Workshop on Climate economic modeling, CIGI-INET conference on False Dichotomies,
- 2013 Agent-Based Modeling workshop at OFCE Paris, CRISIS workshop at Institut Henri Poincaré,
- 2012 Workshop on Carbon price modeling (Potsdam Institute for Climate Impact Research), Seminar at University of Nice, Latsys Symposium on agent-based modeling at ETH Zürich, Seminar at University of Nanterre.
- 2011 Workshop on Domain Specific Languages for Economical and Environmental Models at Chalmers University, Workshop on the 2030 climate framework at the French ministry of the environment.
- 2010: Workshop Advances in Agent-based Computational Economics at Bielefeld university, Sorbonne workshop in Economic Theory at University Paris 1, Workshop Decision Making and Risks in Complex Environments at EHESS.
- 2009: Workshop "Type Theory and Sustainability Modeling" at PIK Potsdam, Workshop "Agent-based Modelling and Sustainable Development" at University Ca' Foscari Venice, Spring School "Mathematics and Sustainable Development" at CNRS-Cargèse, Seminar at University of Maryland.

PUBLICATIONS

In progress

Mandel, A., Nguyen, V. and Dong-Xuan, B. (2024) "Strategic formation of production networks." arXiv preprint arXiv:2401.08929, under review

Mandel, A., & Rusinowska, A., Van den Ende, R., (2023). Network-Based Allocation of Responsibility for GHG-Emissions. Available at SSRN 4430393, under review.

Battiston, S., Mandel, A., Monasterolo, I. and Roncoroni, A. (2023) Climate credit risk and corporate valuation. Available at SSRN: <http://dx.doi.org/10.2139/ssrn.4124002>, under review.

Devetak, M., & Mandel, A. (2023). Using Large Language Models to generate socio-economic datasets. Available at <https://www.researchsquare.com/article/rs-3686756/v1>, under review.

Devetak, M., & Mandel, A. (2024). Industry Aware Firm Level Network Reconstruction.

Revised and Resubmit

Monasterolo, I., Mandel, A., Battiston, S., Mazzocchetti, A., Oppermann, K., Coony, J., Stretton, S., Stewart, F. and Dunz, N., 2022. The Role of Green Financial Sector Initiatives in the Low-Carbon Transition. World Bank Policy Research Working Paper 10181, R&R Global Environmental Change

Mandel, A., Battiston, S. and Monasterolo, I. (2024) "Mapping global financial risks under climate change", R&R Nature Climate Change

Mandel, A., & Veetil, V. P. (2023). Do granular shocks generate sizeable aggregate volatility?. Available at SSRN 4677038. R&R Journal of Evolutionary Economics

Journal Articles

Mandel, A., & Veetil, V. P. (2024). Transient Dynamics of the COVID Lockdown on India's Production Network. Journal of Economic Interaction and Coordination <https://doi.org/10.1007/s11403-024-00409-z>

Calabrese, R., Dombrowski, T., Mandel, A., Pace, R.K. and Zanin, L., (2023). Impacts of Extreme Weather Events on Mortgage Risks and Their Evolution under Climate Change: A Case Study on Florida., European Journal of Operational Research, 314, (1), pp 377-392

Dueñas M, and Mandel A (2023) "The structure of global cultural networks: Evidence from the diffusion of music videos." PLoS ONE 18(11): e0294149. <https://doi.org/10.1371/journal.pone.0294149>

Mandel, A. and Veetil, V. (2022) "Disequilibrium Propagation of Quantity Constraints: application to the COVID lockdowns". Macroeconomic Dynamics, 27 (8).

Grabisch, M., Mandel, A. & Rusinowska, A. (2022) "On the design of public debate in social networks". *Operations Research* 71(2):626-648, doi/10.1287/opre.2022.2356.

Garcia Alvarado, F., & Mandel, A. (2022) "The network structure of global tax evasion evidence from the Panama papers", *Journal of Economic Behavior and Organization*, Vol.197, pp 660-684

Mandel, A, and Venel, X. (2021) "Sequential competition and the strategic origins of preferential attachment.", *International Journal of Game Theory*, available online at <https://doi.org/10.1007/s00182-021-00801-0>.

Mandel, A. Tiggeloven, T. Lincke, D. Koks, E. Ward, P. Hinkel, J. (2021) "Risks on Global Financial Stability Induced by Climate Change", *Climatic Change* Vol. 166(4).

G. Bouveret and A. Mandel, (2021). "Prophylaxis of Epidemic Spreading on networks", *Journal of Mathematical Economics*, Volume 93, March 2021

A. Mandel and V. Veetil (2021) "Monetary dynamics in a network economy", *Journal of Economic Dynamics and Control*, Volume 125, April 2021

A. Mandel and V. Veetil (2020) "The Economic Cost of COVID Lockdowns: an out-of-equilibrium analysis", *Economics of Disasters and Climate Change*, Vol. 4, pp 431–451

A.Mandel, S. Halleck-Vega, D. Wong (2020) " The contribution of technological diffusion to climate change mitigation: a network-based approach", *Climatic Change*, Vol. 160, pp 609-620

A. Mandel and X. Venel (2020) "Dynamic competition on social networks", *European Journal of Operational Research*, Vol. 280(2), pp597-608

L. Paroussos, A. Mandel, K. Fragkiadakis, P. Fragkos, J. Hinkel and Z. Vrontisi (2019) "Climate clubs and the macro-economic benefits of international cooperation on climate policy", *Nature Climate Change*, <https://doi.org/10.1038/s41558-019-0501-1>

A. Mandel, D. Taghawi-Nejad and V.P. Veetil (2019) "Some Price Effects of Monetary Shocks in a Network Economy", *Journal of Economic Behavior and Organization*, Vol. 164, pp 300-316

A. Karpf, A. Mandel and S. Battiston (2018) "Price and Network Dynamics in the European Carbon Market", *Journal of Economic Behavior and Organization*, Vol. 153, pp 103-122.

S. Halleck-Vega, A. Mandel & K. Millock, (2018). "Accelerating diffusion of climate-friendly technologies: A network perspective." *Ecological Economics*, Vol.152, pp 235-245.

A. Karpf, A. Mandel (2018) " The changing value of the `green` label on the US municipal bond market", *Nature Climate Change*, Vol 8, February 2018.

S. Halleck and A. Mandel (2018) "Technology Diffusion and Climate Policy: A Network Approach and its Application to Wind Energy", *Ecological Economics*, Vol. 145, pp 461-471

S. Gualdi and A.Mandel (2018) "Endogenous Growth in Production Networks", *Journal of Evolutionary Economics*, Vol. 29(1), pp 91–117

M. Grabisch, A. Mandel, A. Rusinowska, E. Tanimura (2017) "Strategic Influence in Social Networks", *Mathematics of Operations Research*

S. Battiston, A. Mandel, I. Monasterolo, F. Schuetze, & G. Visentin (2017). "A Climate Stress-Test of the EU Financial System", *Nature Climate Change*, April 2017.

T. Balint, T., F. Lamperti, A. Mandel, M. Napoletano, A. Roventini, A. Sapio, A. (2016). "Complexity and the economics of climate change: a survey and a look forward.", *Ecological Economics*, Vol.138, pp. 252-265

- S. Gualdi and A.Mandel (2016). "On the Emergence of scale-free production networks", *Journal of Economic Dynamics and Control*, Vol. 73, pp 61-77
- A. Mandel and H.Gintis (2016). "Decentralized Pricing and the Equivalence between Nash and Walrasian Equilibrium", *Journal of Mathematical Economics*, Vol. 63, pp 84-92
- D. Tuckett, D., A. Mandel, D. Mangalagiu, and al. (2015). "Uncertainty, Decision Science, and Policy Making: A Manifesto for a Research Agenda". *Critical Review*, Vol 27
- A. Mandel, S. Landini, M. Gallegati, H. Gintis (2015) "Price dynamics, financial fragility and aggregate volatility", *Journal of Economic Dynamics and Control*, Vol. 51, pp 257-277
- G. Ballot, A. Mandel, A. Vignes, (2014). "Agent-based modeling and economic theory: where do we stand ?" *Journal of Economic Interaction and Coordination*, Vol. 10(2), pp 199-220
- A.Mandel and H.Gintis (2014) "Stochastic Stability in the Scarf Economy", *Mathematical Social Sciences*, Vol. 67, pp 44-49
- S. Wolf, S. Fuerst, A. Mandel, W. Lass, D. Lincke, F. Pablo-Marti, C. Jaeger (2013) "Lagom regiO – a multi-agent model of several economic regions", *Environmental Modeling and Software*, vol 44, pp 25-43
- D. Tabara, D. Mangalagiu, R. Kupers, C. Jaeger, A. Mandel, L. Paroussos (2013) "Transformative targets in sustainability policy-making: The case of the 30 percent EU mitigation goal." *Journal of Environmental Planning and Management*, Vol. 56(8), pp 1180-1191.
- S.Wolf, J.-P. Bouchaud, F. Cecconi, S. Cincotti, H. Dawid, H. Gintis, S. van der Hoog, C.C. Jaeger, D.V. Kovalevsky, A. Mandel, L. Paroussos (2013) "Describing economic agent-based models – Dahlem ABM documentation guidelines" *Complexity Economics*, Vol. 2, pp 63–74.
- A. Mandel (2012) "Agent-based dynamics and the general equilibrium model" *Complexity Economics*, Vol 1(1), pp 105-121.
- N. Botta, A. Mandel, C.Ionescu, M. Hoffmann, D. Lincke, S. Schupp, C.Jaeger (2011) "A functional framework for agent-based models of exchange." *Applied mathematics and computation*, Vol. 218(8), pp 4025-4040.
- A. Mandel (2010) "Welfare improvement properties of an allowance market in a production economy," *Annales d'économie et statistiques*, Vol. 93/94, pp 67-77.
- A. Mandel, N. Botta (2009) "A note on Herbert Gintis' "Emergence of a Price System from Decentralized Bilateral Exchange.", *The B.E. Journal of Theoretical Economics*: Vol. 9 : Iss. 1 (Topics), Article 44.
- A. Mandel (2009) "Changes in the firms' behaviour after the opening of markets of allowances." *Economic Theory*, Vol.40(1), pp 1-25.
- A. Mandel (2008) "An index formula for production economies with externalities." *Journal of Mathematical Economics*, Vol. 44(12), pp 1385-1397.

Books

- J-M. Bonnisseau, A. Mandel, Y. Toma, F-G Trébulle (2015). "Penser le changement climatique", *Presses universitaires de la Sorbonne*.
- A. Mandel, Y.Toma (2020). *Art + Mathématiques: modélisations mathématiques et transformations artistiques des données du réel*, Editions Janninck.

Proceedings

A.Karpf, A. Mandel, S. Battiston (2015) " A network-based analysis of the European Emission Market", Proceedings of ECCS 2014, Springer series on complexity.

N.Botta, S. Schupp, A. Mandel, C. Ionescu and M. Hofmann (2013) "Mathematical specification of an agent-based model of exchange", Proceedings "Do-Form: Enabling Domain Experts to Use Formalised Reasoning" - AISB Convention 2013, Pages 38-48.

S. Wolf, S. Fuerst, W. Lass, D. Lincke, A. Mandel, C. Jaeger (2012) "Two modes of scheduling in a simple economic agent-based model", Simultech 2012, pp. 303-308.

Chapters in books

Tàbara, J. David, et al. " Research Challenges for Enabling Social-ecological Tipping Points Toward Regional Sustainability Transformations." Positive Tipping Points Towards Sustainability: Understanding the Conditions and Strategies for Fast Decarbonization in Regions (2024): 325-343.

C. Jaeger, L. Paroussos, D. Mangalagiu, R. Kupers, A. Mandel, D. Tabara, (2011) "Towards a new growth path for Europe" in Jaeger, C. and al. editors "Action for climate: Beyond the zero-sum game", Earthscan

Policy Papers

A.Mandel and S. Halleck-Vega (2018) "Enhancing Technology transfer and diffusion", Greenwin Policy Brief.

F. Lamperti, G. Dosi, A. Mandel, M. Napoletano, A. Roventini, A. Sapio (2017) " A new family of Agent-Based Models and its application to high-end climate scenarios", report of the IMPRESSIONS project to the European Commission.

A. Mandel et al. (2017) "Modelling networks of influence in climate finance", report of the SIMPOL project to the European Commission.

A. Mandel et al. (2016) "Macro models of climate finance", report of the SIMPOL project to the European Commission.

A. Mandel et al. (2016) "Network-based assessment of technological diffusion", report of the GREENWIN project to the European Commission.

R. Tinch,, A. Mandel et al. (2015) "Evaluation of economic approaches under high-end scenarios", report of the IMPRESSIONS project to the European Commission.

A. Mandel et al. (2015) "Modelling climate financial networks", report of the SIMPOL project to the European Commission.

C.Jaeger, A. Mandel et al. (2012) "Key research questions and challenges for Global Systems Science", report of the GSDP project to the European Commission

C.Jaeger, A. Mandel et al. (2011) "An emerging research program for Global Systems Science", report of the GSDP project to to the European Commission.

C. Jaeger, L. Paroussos, D. Mangalagiu, R. Kupers, A. Mandel, J. Tabara (2011) "A new growth path for Europe: generating prosperity and jobs in the low-carbon economy", report to the German Ministry of the Environment.

C. Jaeger, G. Horn, T.Lux, D.Fricke, S. Fuerst, W.Lass, L. Lin, A. Mandel, F. Meissner, S. Schreiber, D. Vesper, R. Zwiener (2009) "From the financial crisis to sustainability" , report to the German ministry of the environment.

REFERENCES

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Carlo Jaeger, Professor Potsdam University, Chairman Global Climate Forum, carlo.jaeger@globalclimateforum.org

Giovanni Dosi, Professor Scuola Superiore Sant'Anna Pisa, gdosi@sssup.it