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Associate Professor  
Department of Environmental and Resource Engineering  
Waste, Climate & Monitoring  
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## Profile

The effects of unsustainable development on our climate are unarguably one of the biggest global challenges of our times. Yet, the devastating impacts of decades of carbon-based economy and mass-consumption extend far beyond the purely environmental impacts of climate change. We have witnessed unsustainable exploitation of resources and land, with irreversible and devastating impacts on environment, biodiversity, our health and our communities. We have also seen these impacts affecting disproportionately marginalized sectors of our societies. The concepts of **sustainable development** and **life-cycle thinking** were born decades ago, but acceptance and actual implementation of these concepts and their learnings has so far been slower than the multiple consequences of fast technological development.

Today we are at an extremely important turning point. In the light of global climate awareness, which now more than ever is reaching the public opinion, governments worldwide are fostering a "green and sustainable transition", for example decarbonizing energy and transport sectors, and promoting circular economy models for resources. "Green" thus differs than previous practices, and is implicitly sustainable. However, we have already seen how transitions can potentially trigger devastating effects, for example land use change and deforestation from first generation biofuels, resource depletion from mining for chemicals for our batteries, and potential exposure from chemicals in recycled materials. Moreover, "green transition" in developed countries can still unequally affect less affluent and developed counties in the world. **My ultimate aim as an environmental engineer, researcher and educator is to foster truly sustainable transition. My means are my research in sustainability assessment, application of my research in societally relevant projects, communication of my research to society and long-term impact thanks to education of younger generations in sustainable use of our resources.** My fields of research are:

Life cycle assessment (LCA) applied to waste management technologies and emerging technologies and systems

Uncertainty analysis, scenario analysis and global sensitivity analysis

Future scenario analysis

Carbon capture and storage

Carbon capture and utilization

Waste incineration

## Employment

### Associate Professor

Department of Environmental and Resource Engineering  
Technical University of Denmark  
Kgs. Lyngby, Denmark  
2 Apr 2013 → present

### Waste, Climate & Monitoring

Technical University of Denmark  
Kgs. Lyngby, Denmark  
17 Apr 2024 → present

## Research outputs

### Waste LCA and the future

Bisinella, V., Schmidt, S., Varling, A. S., Laner, D. & Christensen, T. H., 2024, In: Waste Management. 174, p. 53–75 23 p.

**Climate change impacts of conventional sewage sludge treatment and disposal**

Chang, H., Zhao, Y., Bisinella, V., Damgaard, A. & Christensen, T. H., 2023, In: *Water Research*. 240, 11 p., 120109.

**Environmental Impact Assessment of Frozen Peas Production from Conventional and Organic Farming in Italy**

Boakye-Yiadom, K. A., Ilari, A., Bisinella, V., Pedretti, E. F. & Duca, D., 2023, In: *Sustainability*. 15, 18, 20 p., 13373.

**Life cycle assessment of alternative biogas utilisations, including carbon capture and storage or utilisation**

Varling, A. S., Christensen, T. H. & Bisinella, V., 2023, In: *Waste Management*. 157, p. 168-179 12 p.

**Life cycle assessment of the dominant scenarios of waste management system in the north of Iran**

Nabavi-Pelesaraei, A., Bisinella, V. & Damgaard, A., 2023, *Proceedings of 19th International Symposium on Waste Management, Resource Recovery and Sustainable Landfilling*. CISA Publisher, 13 p.

**Mini review on life cycle assessment of chemical recycling for polyethylene terephthalate packaging: A background for UPLIFT project**

Nabavi-Pelesaraei, A., Damgaard, A. & Bisinella, V., 2023, *Proceedings of 19th International Symposium on Waste Management, Resource Recovery and Sustainable Landfilling*. CISA Publisher, 10 p.

**Climate Change Impact of the Development in Household Waste Management in China**

Zhao, Y., Chang, H., Liu, X., Bisinella, V. & Christensen, T. H., 2022, In: *Environmental Science and Technology*. 56, 12, p. 8993-9002 10 p.

**Environmental assessment of amending the Amager Bakke incineration plant in Copenhagen with carbon capture and storage**

Bisinella, V., Nedenskov, J., Riber, C., Hulgaard, T. & Christensen, T. H., 2022, In: *Waste Management and Research*. 40, 1, p. 79-95 17 p.

**Life cycle assessment of air-pollution-control residues from waste incineration in Europe: Importance of composition, technology and long-term leaching**

Maresca, A., Bisinella, V. & Astrup, T. F., 2022, In: *Waste Management*. 144, p. 336-348 13 p.

**Climate change impacts of introducing carbon capture and utilisation (CCU) in waste incineration**

Christensen, T. H. & Bisinella, V., 2021, In: *Waste Management*. 126, p. 754-770

**Environmental assessment of carbon capture and storage (CCS) as a post-treatment technology in waste incineration**

Bisinella, V., Hulgaard, T., Riber, C., Damgaard, A. & Christensen, T. H., 2021, In: *Waste Management*. 128, p. 99-113

**Environmental Profile of NO<sub>x</sub> Reduction by a Photocatalytic Surface Coating and a Vehicle Catalytic Converter**

Bisinella, V., Dahl, L., Jensen, H., Mikkelsen, T. N. & Christensen, T. H., 2021, In: *Journal of Environmental Protection*. 12, 9

**Future scenarios and life cycle assessment: systematic review and recommendations**

Bisinella, V., Christensen, T. H. & Astrup, T. F., 2021, In: *International Journal of Life Cycle Assessment*. 26, p. 2143–2170 28 p.

**Introducing Carbon Capture and Storage (CCS) in Waste Incineration**

Bisinella, V., Hulgaard, T., Riber, C., Damgaard, A. & Christensen, T. H., 2021, *Proceedings SARDINIA2021*. CISA Publisher

**Application of LCA modelling in integrated waste management**

Christensen, T. H., Damgaard, A., Levis, J., Zhao, Y., Björklund, A., Arena, U., Barlaz, M. A., Starostina, V., Boldrin, A., Astrup, T. F. & Bisinella, V., 2020, In: *Waste Management*. 118, p. 313-322

**Feeding or energy purposes? Quantifying the environmental impact of alternative uses of biomass residues**  
Hede Fjellander, O., Nørgaard, D. S., Jensen, P. R. & Bisinella, V., 2019. 5 p.

**Life Cycle Assessment of the management of industrial textile waste in Northern Italy: Factors influencing sustainability**  
Spadavecchia, E., Damgaard, A. & Bisinella, V., 2019. 6 p.

**Material flow analysis and life cycle assessment of danish household waste - factors of importance**  
Takou, V., Bisinella, V., Damgaard, A. & Astrup, T. F., 2019, *Proceedings SARDINIA 2019*. CISA Publisher, 8 p.

**Combined uncertainty and scenario analysis within Life Cycle Assessment of waste management systems**  
Bisinella, V., Conradsen, K., Christensen, T. H. & Astrup, T. F., 2018, *SETAC Europe 28th Annual Meeting - abstract book*. Brussels, Belgium: Society of Environmental Toxicology and Chemistry, p. 5-5 15

**Life Cycle Assessment of biorefineries: how robust are the results?**  
Bisinella, V., Conradsen, K., Christensen, T. H. & Astrup, T. F., 2018, *Sustain Conference 2018: Creating Technology for a Sustainable Society*. C. M. & K. M. (eds.). Lyngby, Denmark: Technical University of Denmark, 1 p.

**Life Cycle Assessment of grocery carrier bags**  
Bisinella, V. (ed.), Albizzati, P. F. (ed.), Astrup, T. F. (ed.) & Damgaard, A. (ed.), 2018, København Ø: Danish Environmental Protection Agency. 143 p. (Miljøprojekter; No. 1985).

**Life Cycle Assessment of management options for beverage packaging waste**  
Bisinella, V. (ed.), Albizzati, P. F. (ed.), Astrup, T. F. (ed.) & Damgaard, A. (ed.), 2018, København Ø: Danish Ministry of Environment and Food. 132 p.

**Decision making within waste management: combined uncertainty and scenario analysis for the life cycle assessment of a danish case study**  
Bisinella, V., Conradsen, K., Christensen, T. H. & Astrup, T. F., 2017. 1 p.

**Erratum to: A global approach for sparse representation of uncertainty in Life Cycle Assessments of waste management systems**  
Bisinella, V., Conradsen, K., Christensen, T. H. & Astrup, T. F., 2017, In: *International Journal of Life Cycle Assessment*. 22, 5, p. 839-839 1 p.

**Future scenario analysis within waste management and life cycle assessment of waste management solutions**  
Bisinella, V., Christensen, T. H. & Astrup, T. F., 2017. 1 p.

**Future scenario development within life cycle assessment of waste management systems**  
Bisinella, V., 2017, Kgs. Lyngby: Department of Environmental Engineering, Technical University of Denmark (DTU). 60 p.

**Importance of waste composition for Life Cycle Assessment of waste management solutions**  
Bisinella, V., Götze, R., Conradsen, K., Damgaard, A., Christensen, T. H. & Astrup, T. F., 2017, In: *Journal of Cleaner Production*. 164, p. 1180-1191

**What type of shopping bag to use? Perspectives on the functionality and recycling of polymers**  
Damgaard, A. & Bisinella, V., 2017, *Book of Abstracts Sustain 2017*. Kgs. Lyngby, Denmark: Technical University of Denmark, 1 p. Sustain Abstract P-4

**A global approach for sparse representation of uncertainty in Life Cycle Assessments of waste management systems**  
Bisinella, V., Conradsen, K., Christensen, T. H. & Astrup, T. F., 2016, In: *International Journal of Life Cycle Assessment*. 21, 3, p. 378-394

**Quantifying uncertainty in sustainability assessments: from feedstock to end-of-life**

Bisinella, V., Conradsen, K., Damgaard, A., Christensen, T. H. & Astrup, T. F., 2015, *Book of Abstracts. DTU's Sustain Conference 2015*. Technical University of Denmark, 1 p. A-14

**Recent LCA Developments In Waste Management**

Christensen, T. H., Astrup, T. F., Brogaard, L. K-S., Bisinella, V. & Damgaard, A., 2015, *Proceedings Sardinia 2015, 15th International Waste Management and Landfill Symposium*. Cagliari, Italy: CISA Publisher, 8 p.

**Understanding uncertainty propagation in life cycle assessments of waste management systems**

Bisinella, V., Conradsen, K., Christensen, T. H. & Astrup, T. F., 2015, *Proceedings Sardinia 2015, 15th International Waste Management and Landfill Symposium*. Cagliari, Italy: CISA Publisher, 8 p.

**EASETECH Energy: Life Cycle Assessment of current and future Danish power systems**

Turconi, R., Damgaard, A., Bisinella, V. & Astrup, T. F., 2013. 7 p.

**Activities****LCA's role in sustainable transition. Application to carbon capture, storage and utilization**

Valentina Bisinella (Guest lecturer)

8 Feb 2023

**Life Cycle Assessment of the management of industrial textile waste in Northern Italy: Factors influencing sustainability**

Valentina Bisinella (Speaker)

4 Oct 2019

**Feeding or energy purposes? Quantifying the environmental impact of alternative uses of biomass residues**

Valentina Bisinella (Speaker)

30 Sept 2019

**Development and interpretation of future scenarios in Life Cycle Assessment**

Valentina Bisinella (Speaker)

9 Jul 2019

**Life Cycle Assessment of biorefineries: how robust are the results?**

Valentina Bisinella (Speaker)

Dec 2018

**Future scenario analysis within waste management and LCA of waste management systems**

Valentina Bisinella (Speaker)

Jun 2018

**Quantification of uncertainty in LCAs of waste management systems: Methods and future challenges**

Valentina Bisinella (Speaker)

Jun 2018

**Combined uncertainty and scenario analysis within Life Cycle Assessment of waste management systems**

Valentina Bisinella (Speaker)

May 2018

**Decision making within waste management: combined uncertainty and scenario analysis for the life cycle assessment of a danish case study**

Valentina Bisinella (Speaker)

Oct 2017

**Future scenario analysis within waste management and life cycle assessment of waste management solutions**

Valentina Bisinella (Speaker)

Oct 2017

**The International Journal of Life Cycle Assessment (Journal)**

Valentina Bisinella (Reviewer)

2016 → ...

**Waste Management (Journal)**

Valentina Bisinella (Reviewer)

2016 → ...

**DTU Sustain Conference 2015**

Valentina Bisinella (Speaker)

17 Dec 2015

**Sardinia 2015 - 15th International Waste Management and Landfill Symposium**

Valentina Bisinella (Speaker)

5 Oct 2015 → 9 Oct 2015

**Prizes****Course of the Year, Bioresources, DTU Environment**

Bisinella, Valentina (Recipient), 2020

**Teacher of the Year, Technical University of Denmark**

Bisinella, Valentina (Recipient), 2020

**Awards****Future Scenario Analysis in Solid Waste Management**

Bisinella, V., Astrup, T. F., Christensen, T. H., Boldrin, A., Brandão, M. M. R. & Guyonnet, D.  
Technical University of Denmark

01/07/2013 → 05/12/2017

**Projects****Future Scenario Analysis in Solid Waste Management**

Bisinella, V., Astrup, T. F., Christensen, T. H., Boldrin, A., Guyonnet, D. & Brandão, M. M. R.  
Technical University of Denmark

01/07/2013 → 05/12/2017

**LCA modelling of emerging waste management technologies and systems**

Varling, A. S., Bisinella, V. & Christensen, T. H.

01/05/2022 → 30/04/2025