

ARDA IŞILDAR, PhD

Senior Sustainability & Critical Raw Materials Expert

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PERSONAL STATEMENT

Senior sustainability expert (PhD) and Founder & Managing Director of **Lumin Sustainability Advisory UG**, with **11+ years** of experience in environmental assessment, climate strategy, and circular resource management across **energy, industrial manufacturing, technology/semiconductors, and financial sectors**. Strong technical expertise in **Life Cycle Assessment (LCA)**, **Product Carbon Footprinting (PCF)**, and **GHG accounting (Scopes 1–3)**, grounded in academic training in sustainable resource management and environmental engineering.

I work at the intersection of **climate change, critical raw materials (CRMs), and circular economy**, translating complex methodologies and indicators into actionable guidance for **policymakers, public institutions, standardisation bodies, NGOs, and industry stakeholders**. Through Lumin, I support organisations with **science-driven decision support** on product sustainability, decarbonisation roadmaps, circular material flows, and alignment with **EU Green Deal / sustainability regulation** (e.g., CSRD, CBAM, ESPR and CRM-related initiatives).

KEY EXPERTISE

Sustainability Strategy & Governance: 13+ years designing and implementing sustainability and climate programmes across consulting and industry. Experience building governance structures, KPIs and internal guidance for product sustainability, Scope 3, and responsible sourcing, working with senior leadership and cross-functional teams to embed sustainability into processes and decision-making.

Institutional capacity building: development of guidance documents, training materials, internal methodologies, and operational templates for complex sustainability topics (LCA/PCF/Scope 3, circularity metrics, supplier data quality).

Critical raw materials (CRM): active in the field, record of publications and books, managing director of Lumin offer consultancy on CRM to private sector, deep expertise in secondary raw material recovery (incl. WEEE) and the role of CRM in renewable energy and electrification value chains.

Stakeholder engagement: experience convening and engaging cross-functional and external stakeholders (industry, suppliers, engineers, policy/community actors), facilitating workshops and translating evidence into decision-ready briefs.

CAREER

Founder & Managing Director – Lumin Sustainability Advisory UG (haftungsbeschränkt)
Berlin, Germany | 2024–present

- Founded and led a boutique sustainability advisory practice focused on science-based environmental assessment, climate strategy and critical raw materials.
- Deliver independent expert services on LCA/PCF, GHG accounting, environmental cost (ECI/MKI) and circular economy to industrial and financial clients.
- Support clients in aligning with EU Green Deal policies (CSRD, CBAM, ESPR, CRM-related initiatives) and in understanding the environmental implications of material choices, including bio-based and circular options.

Lead Specialist – Environmental Assessment, GE Vernova (HVDC Systems) 2024–2025 – Berlin, DE

- Conducted environmental emission modelling and exposure pathway analysis for complex industrial systems. Evaluated supplier data quality, hazardous material emissions, and environmental risks.
- Prepared internal presentations, guidance documents and training sessions explaining LCA and environmental results to engineers, product managers and senior management.

Senior Manager – Corporate Sustainability, TE Connectivity (2021–2024) – Den Bosch NL, Bensheim DE, PA, USA

- Performed environmental risk assessments for emissions from industrial processes. Reviewed and validated multiple LCA and environmental hazard evaluations under ISO 14044, Environmental Footprint, and EN standards.
- Co-developed internal communications (guidelines, slide decks, supplier materials) to explain the PCF Policy and engage internal and external stakeholders in Scope 3 reduction.

Principal Consultant, Climate Change & Corporate Sustainability | ERM (Netherlands, Global) (2020 – 2022)

- Managed high-impact projects on portfolio alignment (e.g., ABN AMRO, BNP Paribas), applying major frameworks (SBTi, PCAF, TCFD).
- Delivered climate scenario modeling, double materiality assessments, and comprehensive climate disclosure support. Contributed to major proposal development and thought leadership, while mentoring junior consultants.

Manager, Climate Change & Sustainability Advisory | KPMG (Netherlands) (2018 – 2020)

- Developed decarbonization roadmaps and climate scenario narratives under common frameworks (RCP/SSP).
- Advised clients on sustainability governance and delivered ESG reporting alignment (GRI, CDP, SASB).

Global Sustainability & Environmental (EHS) Manager | Nexperia B.V. (NXP Semiconductors) (Netherlands, Global) (2015 – 2018)

- Led corporate GHG reporting, substance phase-out, and audits across EMEA and Asia.
- Coordinated due diligence and sustainability disclosures on conflict minerals and chemicals compliance (REACH, RoHS).

LANGUAGES

English (fluent), C2 | Turkish (native) | C2 Dutch (Advanced), C1 German (upper-intermediate), B1 French (basic)

EDUCATION

• **PhD, Environmental Technology**

Joint Degree: UNESCO-IHE Institute for Water Education (NL), TU Delft (NL), Université Paris-Est Marne-la-Vallée (FR), Università di Cassino e del Lazio Meridionale (IT) **(2013 – 2016)**

Dissertation: Novel Technologies for Metal Recovery from Electronic Waste [Weblink](#).

• **M.Sc., Sustainable Resource Management**

Technische Universität München (DE), **(2010 – 2012)** **Final Thesis:** Climate Change Adaptation in the Eastern Mediterranean **(Graduated with Merit)** (Final score: 2.1/5.0)

• **B.Eng., Environmental Engineering**

İstanbul Üniversitesi (TR) **(2004 – 2008)** **Final Thesis:** Treatment of Pharmaceutical Wastewaters by MBR Processes **Graduated with High Distinction.**

PUBLICATIONS

- **Full list:** 1 book, 4 book chapters, 16 peer-reviewed articles, many articles

- Editor of *Critical Materials and Sustainability Transition* (CRC Press, 2024) [Weblink](#)

- **Impact:** 1,300+ citations; h-index 14 ([Google Scholar](#)).

- **Relevant to this call:** From Resource Security to Geopolitical Leverage Mapping and Benchmarking Global Critical Mineral Policies, *Işıldar*, Next Energy 2026 (in review)

PROJECTS

Led or contributed to 48+ sustainability and climate projects across supply chain decarbonization, ESG indicator design, PCF standardization, and disclosure frameworks. Cumulative project value exceeds €10.1 million. Full list available upon request.

CONFERENCE and OTHER SPEAKER ENGAGEMENTS (2020–Present)

Appeared in 11 events as a keynote speaker, presenter, interviewee in the last 5 years. Highlights are International Conference on Life Cycle Assessment (20225) (LCA), Keynote Speaker on decarbonization and critical raw materials in energy systems (2022), World Circular Economy Forum (WCEF) Side Event – Panelist on secondary raw materials and EU Critical Raw Materials Act (2024).

CERTIFICATIONS & HONORS (2020–Present)

Recipient of multiple international awards and recognitions. Awarded Best Article by the Journal of Hazardous Materials (2020) for pioneering work on e-waste recycling and critical materials recovery. Honored with the Best Book Chapter Award by CRC Press / Routledge. Earlier achievements retained due to relevance include ISWA–SWIS Essay Competition & Winter School Winner (2017) and the Philips Innovation Award – Rough Diamond Prize (€50,000, 2016).

PROFESSIONAL MEMBERSHIPS

Active in international networks bridging sustainability, energy, and policy. Member of the International Society for Industrial Ecology (ISIE), Life Cycle Initiative (UNEP/SETAC), and ISWA Young Professionals Group. Contributed to the Sustainability Leaders benchmarking network (2023–present) as account manager and annual participant. Engaged with Eurometaux / EPMF and industry associations on precious metals, chemicals, and ESG. Registered as expert evaluator for Horizon Europe, EIT RawMaterials, and multiple EU calls. Frequent reviewer for leading scientific journals.

PUBLICATIONS (SELECTED TOP)

14 peer-reviewed publications and book chapters with 1220 citations, **h-index: 8** (As of February 2025).

Books and Volumes

- Critical Materials and Sustainability Transition** (2024), *Editors: A. Işıldar, E.D. van Hullebusch, D. Huisingh*
Published by CRC Press, this volume explores critical mineral governance in the context of sustainability transitions. [Taylor & Francis](#)
- *Metal Recovery from Electronic Waste: Biological Versus Chemical Leaching for Recovery of Copper and Gold** (2018) *Author: A. Işıldar*; This PhD thesis investigates novel metal recovery technologies from waste electrical and electronic equipment (WEEE), focusing on bioleaching processes. [Barnes & Noble](#)

Key Journal Articles

- Işıldar, A., van Hullebusch, E.D., Lenz, M., Du Laing, G., Marra, A., Cesaro, A., Panda, S., Akcil, A., Kucuker, M.A., Kuchta, K. (2019). *Biotechnological strategies for the recovery of valuable and critical raw materials from waste electrical and electronic equipment (WEEE) – A review*. Journal of Hazardous Materials, 362, 467–481.
- Işıldar, A., Rene, E.R., van Hullebusch, D.E., Lens, P.N.L. (2017). *Electronic waste as a secondary source of critical metals: Management and recovery technologies*. Resources, Conservation and Recycling, 135, 296–312. [ResearchGate](#)
- Villares, M., Işıldar, A., Giesen, C.G., Guinée, J. (2017). *Does ex ante application enhance the usefulness of LCA? A case study on bioleaching of e-waste for metal recovery*. The International Journal of Life Cycle Assessment, 22(10), 1618–1633. [SpringerLink](#)
- Işıldar, A., van de Vossenberg, J., van Hullebusch, D.E., Lens, P.N.L. (2016). *Two-step bioleaching of copper and gold from discarded printed circuit boards (PCB)*. Waste Management, 57, 149–157. [PubMed](#)

Book Chapters

- Işıldar, A. (2018). *Biotechnologies for metal recovery from electronic waste and printed circuit boards*. In *Waste Electrical and Electronic Equipment Recycling* (pp. 241–269).
- Işıldar, A., van de Vossenberg, J., van Hullebusch, D.E., Lens, P.N.L. (2017). *Biorecovery of metals from electronic waste*. In *Sustainable Heavy Metal Remediation* (pp. 241–278).

For a comprehensive list of publications, please refer to Arda Işıldar's [Google Scholar profile](#)

SELECTED PROJECTS (Relevant to the role)

Led or contributed to 45+ sustainability and climate projects across supply chain decarbonization, ESG indicator design, PCF standardization, and disclosure frameworks. Cumulative project value exceeds €10.1 million. Full list available upon request.

PCF Standardization, LCA Modeling & Battery Value Chain Transparency

- **TE Connectivity – Product Carbon Footprint (PCF) Policy Development & Supplier Rollout**
Project Owner, 2022–2024
Developed TE’s PCF technical specification to govern product carbon reporting across its global supplier base — covering metals, plastics, connectors, and cable assemblies used in automotive and industrial applications. The policy aligns with **EN 50693**, **GHG Protocol Product Standard**, and guides suppliers on primary data collection, emissions boundaries, and tool usage. Supported data governance and internal dissemination in procurement, operations, and logistics.
- **GE Vernova – LCA for High-Voltage Systems (HVDC, Switchgear)**
Lead Specialist, 2024–ongoing
Built cradle-to-gate LCA models for electrical infrastructure using **SimaPro** and **OpenLCA**. Integrated Ecoinvent datasets with supplier-specific inputs and supported development of Environmental Product Declarations (EPDs). Applied learnings from metals, fluorinated gases, and transformer components — key for upstream impact transparency in electrification systems.
- **Microsoft – Carbon Labeling & Comparative LCA Advisory**
SME, ERM (2021)
Benchmarked product-level environmental labeling schemes, including digital product passports. Contributed to methodology design based on LCA, peer benchmarks, and regulatory pathways.

ESG Indicator Design, Disclosure & Scope 3 Governance

- **KPMG Global – Science-Based Target Setting (SBTi)**
SME, KPMG (2020–2021)
Reviewed emissions data and drafted decarbonization targets across global entities. Led metric alignment for Scope 1–3 and formalized reporting for SBTi submission.
 - **Booking.com – GHG Management Strategy & Internal Capacity Building**
Project Manager & SME, ERM (2020–2021)
Developed the company’s GHG inventory methodology and trained internal teams on emissions monitoring, Scope 3 estimation, and supplier engagement processes.
 - **Umicore S.A. – ESG and Sectoral Decarbonization Support**
SME, KPMG (2020)
Provided input on **critical materials supply chain decarbonization** using the SBTi SDA methodology. Helped map ESG indicators related to climate and supply risk.
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Value Chain Risk, Critical Materials & Policy Alignment

- **ABN AMRO – Portfolio Alignment & Financed Emissions Strategy**
Lead Consultant, ERM (2021–2022)
Modeled climate impacts of high-emitting sectors (e.g., industrial metals, transport). Helped develop bank-wide alignment methodology under PCAF and TCFD.
 - **BNP Paribas – GHG Modeling for Resource-Intensive Sectors**
Project Manager & SME, ERM (2021–2022)
Designed a custom GHG estimation model for heavy industry. Integrated **value chain emissions** and climate risk into client-facing disclosure tools.
 - **Just Transition Fund (EC/Poland) – Application Review**
Project Manager & SME, KPMG (2020)
Assessed alignment of Poland’s transition plan with EU climate and energy policy. Reviewed funding eligibility for regional industry decarbonization, including fossil fuel phase-out and workforce transition.
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ESG Assurance, Material Risk & Impact Validation

- **European Investment Bank – Green Bond Audit & ESG Assurance**
Project Manager, KPMG (2019)
Audited Climate Awareness Bonds and validated sustainability indicators related to renewable energy and infrastructure financing.
- **European Stability Mechanism – Carbon Footprint Review**
Project Manager & Reviewer, KPMG (2020)
Conducted methodological and data quality reviews of the institution’s inaugural GHG inventory.
- **Ahold Delhaize – TCFD Climate Risk Scenarios**
SME, KPMG (2020)
Developed physical and transition risk scenarios to assess retail supply chain vulnerabilities under climate stressors.

CONFERENCES & SPEAKING ENGAGEMENTS (2020–Present)

- **Feb 2025 – GE Vernova Sustainability Leadership Series**
Speaker: Environmental cost modeling and LCA for HVDC & switchgear systems
 - **Oct 2023 – Scope 3 & Value Chain Decarbonization Forum (Amsterdam)**
Speaker: Scope 3 governance and supplier engagement in manufacturing supply chains
 - **May 2023 – SETAC Europe Annual Meeting**
Presenter: PCF and LCA of electromechanical components under EN 50693
 - **Jun 2023 – Future Bright Summit – TE Connectivity**
Invited Speaker: Product Carbon Footprint (PCF) policy integration and supplier rollout
 - **Sept 2020 – Business Council for Sustainable Development (SKD Türkiye)**
Speaker: Climate target alignment for Turkish industry – [Watch](#)
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REFERENCES

Available upon request