



Universiteit
Leiden
The Netherlands

Driving the sustainable transition: battery material dynamics and emission assessments of EU electric mobility

Tang, C.

Citation

Tang, C. (2026, May 19). *Driving the sustainable transition: battery material dynamics and emission assessments of EU electric mobility*. Retrieved from <https://hdl.handle.net/1887/4304420>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/4304420>

Note: To cite this publication please use the final published version (if applicable).

Driving the Sustainable Transition

Battery Material Dynamics and Emission Assessments
of EU Electric Mobility

Chen Tang

Chen Tang (2026)

Driving the Sustainable Transition: Battery Material Dynamics and Emission Assessments of EU Electric Mobility

PhD Thesis at Leiden University, The Netherlands

The research described in this thesis was conducted at the Institute of Environmental Sciences (CML), Leiden University, the Netherlands. All rights reserved. No parts of this publication may be reproduced in any form without the written consent of the copyright owner.

ISBN: 9789051913026

Cover Design: Chen Tang, Jill den Boer

Printing: Print&Bind, Print.Amsterdam BV

Driving the Sustainable Transition

Battery Material Dynamics and Emission Assessments of EU Electric Mobility

Proefschrift

ter verkrijging van
de graad van doctor aan de Universiteit Leiden,
op gezag van rector magnificus prof.dr. S. de Rijcke,
volgens besluit van het college voor promoties
te verdedigen op dinsdag 19 mei 2026
klokke 13:00 uur

door

Chen Tang
geboren te Dalian, China
in 1992

Promotores:

Dr. J. M. Mogollón

Prof. dr. A. Tukker

Promotiecommissie:

Prof. dr. ing. M.G. Vijver

Prof. dr. E. van der Voet

Prof. dr. E. G. M. Kleijn

Prof. dr. J. M. Cullen (University of Cambridge)

Dr. K. Remmen (Eidgenössische Materialprüfungs- und Forschungsanstalt)

Dr. S. Martins da Cunha

CONTENTS

Summary	1
Chapter 1	11
Introduction	
Chapter 2	21
The impact of climate policy implementation on lithium, cobalt and nickel demand: the case of the Dutch automotive sector up to 2040	
Chapter 3	39
Assessing the European electric-mobility transition: emissions from electric vehicle use and production in relation to the EU greenhouse gas emission targets	
Chapter 4	59
The demand and recycling potential for lithium, cobalt, and nickel in the European electric-mobility transition	
Chapter 5	77
Assess the feasibility of meeting EU demand for secondary raw materials for new EV battery production through domestic recycling	
Chapter 6	93
General Disucssion	
References	105
Acknowledgements	123
List of publications	125
Curriculum Vitae	126
Appendix	127