



UNIVERSITEIT VAN AMSTERDAM

Third-Year Progress Report

**ENLENS: ENERGY TRANSITION THROUGH THE LENS
OF SUSTAINABLE DEVELOPMENT GOALS**





@ENLENS September 2025

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Editors: Bob van der Zwaan and Drielli Peyerl.

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Foreword



The urgent need to rapidly reduce carbon dioxide emissions - to prevent uncontrollable climate change and to meet the targets of the Paris Agreement - informs decisions on how the energy transition is defined, designed, and implemented in the Netherlands. This transition is deeply intertwined with all of the Sustainable Development Goals (SDGs), yet its broader impacts on these SDGs are often overlooked or insufficiently studied. The aim of the Research Priority Area (RPA) at the University of Amsterdam, entitled "Energy Transition through the Lens of Sustainable Development Goals" (ENLENS), is to foster and initiate interdisciplinary research that generates new insights into how national and local energy transition decisions produce externalities, positive and negative, from economic, social, environmental, ethical, and political perspectives. At the same time, the program seeks to advance progress toward achieving the SDGs. Up to now, 24 ENLENS projects have examined how national and international developments in the energy transition may - or in some cases, may not - contribute to building a more sustainable society, by investigating their impacts on all 17 SDGs. This report presents the key achievements of ENLENS over the past four years.

We hope you enjoy reading it!



Bob van der Zwaan and Drielli Peyerl
(Editors of the Third-Year Progress Report, 2025)

Introduction

ENLENS has thus far brought together over 58 researchers across 24 ongoing projects at UvA. The approaches employed in these projects have integrated expertise from six different faculties and are jointly used to study the energy transition in light of the SDGs.

In a period of four years, ENLENS has established a network of more than 700 researchers across UvA interested in its achievements and activities. ENLENS projects have addressed the national and regional energy transition in the Netherlands and Europe, while extending their reach to countries in South America and Africa. They transcend geographical borders, as intended from the outset of this RPA in early 2022. The efforts under ENLENS have contributed to a better understanding of how to advance toward achieving all 17 SDGs.

ENLENS activities include a bimonthly newsletter featuring updates on project-related initiatives, a dedicated website, educational programs, a video series, and a growing set of publications. In addition, the Future of Energy (FoE) seminar series - organized by ENLENS in partnership with the Institute for Advanced Study (IAS) - successfully brings together researchers from all UvA faculties with an interest in the energy transition, sustainable development, and climate change.

The ENLENS team is developing new methodologies that UvA researchers can use to measure the tangible impacts of their research in relation to the energy transition and SDGs. Developing methodologies to track progress on and impacts of the SDGs remains one of the major global challenges. The ENLENS team is actively works in providing didactic material for UvA courses that integrates the energy transition with the SDGs and makes it accessible to all UvA researchers. The upcoming last year of this RPA focuses on further expanding the network and strengthening connections with other national and international centers that pursue strategies aligned with those of ENLENS. Before, September 2025 the ENLENS team will wrap up it is activities, summarise the project`s findings, and make available the final overall achievements report.



ENLENS is one of the interfaculty Research Priority Areas at the University of Amsterdam. The aim of this RPA is to stimulate and initiate interdisciplinary, cross-faculty research that maps the energy transition in the Netherlands and Europe against the SDGs, and beyond Dutch and European borders. ENLENS provides seed funding for joint cross-faculty initiatives to create new opportunities for researchers to apply their expertise through an interdisciplinary approach and to develop joint proposals for external research funding.

The ENLENS team is actively exploits the outcomes of the 24 projects carried out under ENLENS. We focus here in synthesizing and building upon the results to deepen our understanding of the energy transition in relation to the SDGs. By drawing insights from these interdisciplinary initiatives, we aim to generate broader impact, identify emerging research opportunities, submit new research proposals, and support the continuation and development of future research efforts across faculties of UvA, notably in the context of UvA's new climate institute SEVEN.





ENLENS Team



Bob van der Zwaan

Faculty of Science (FNWI)
(Scientific Director of ENLENS)



Ans Kolk

Faculty of Economics and Business (FEB)
(Board of ENLENS)



Barbara Hogenboom

Faculty of Humanities (FGW)
(Board of ENLENS)



John Grin

Faculty of Social and Behavioural Sciences
(FMG)
(Board of ENLENS)



Marija Bartl

Faculty of Law (FdR)
(Board of ENLENS)



Coyan Tromp

Institute for Interdisciplinary Studies (IIS)
and Faculty of Science (FNWI)
(Philosopher of Science)



Drielli Peyerl

Faculty of Science (FNWI)
(Postdoc)

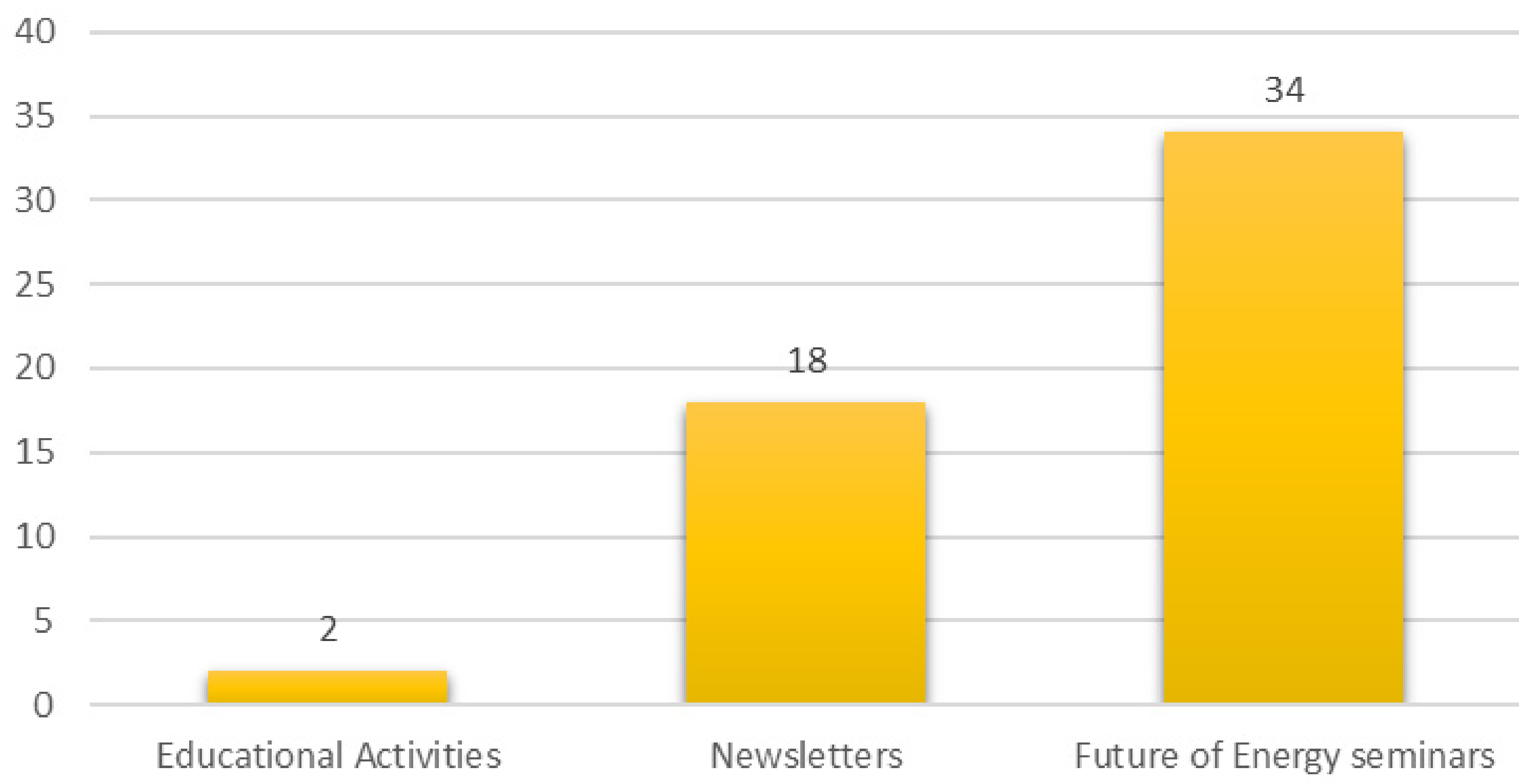
ENLENS in numbers



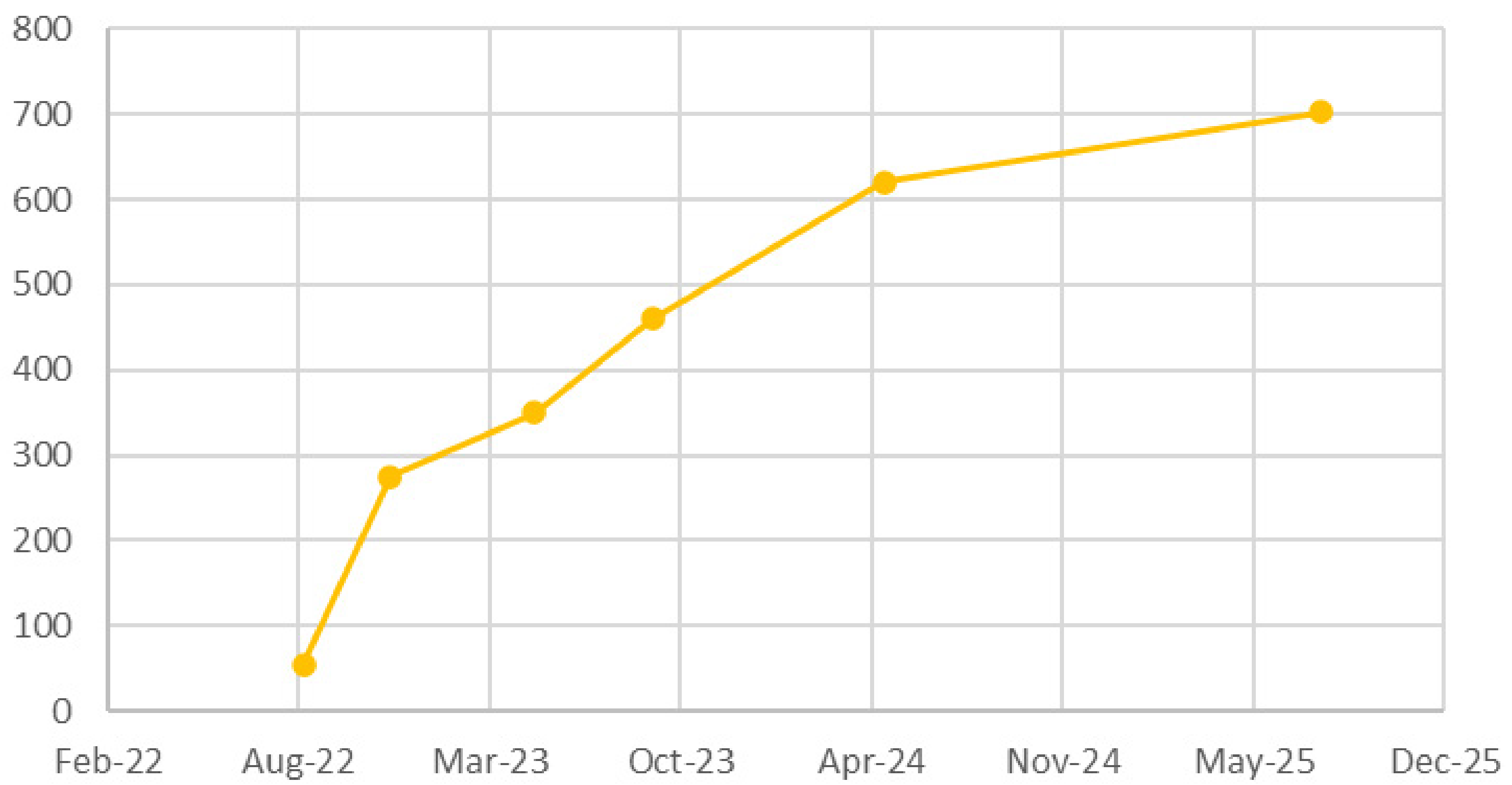
ENLENS IN NUMBERS



ENLENS ACTIVITIES

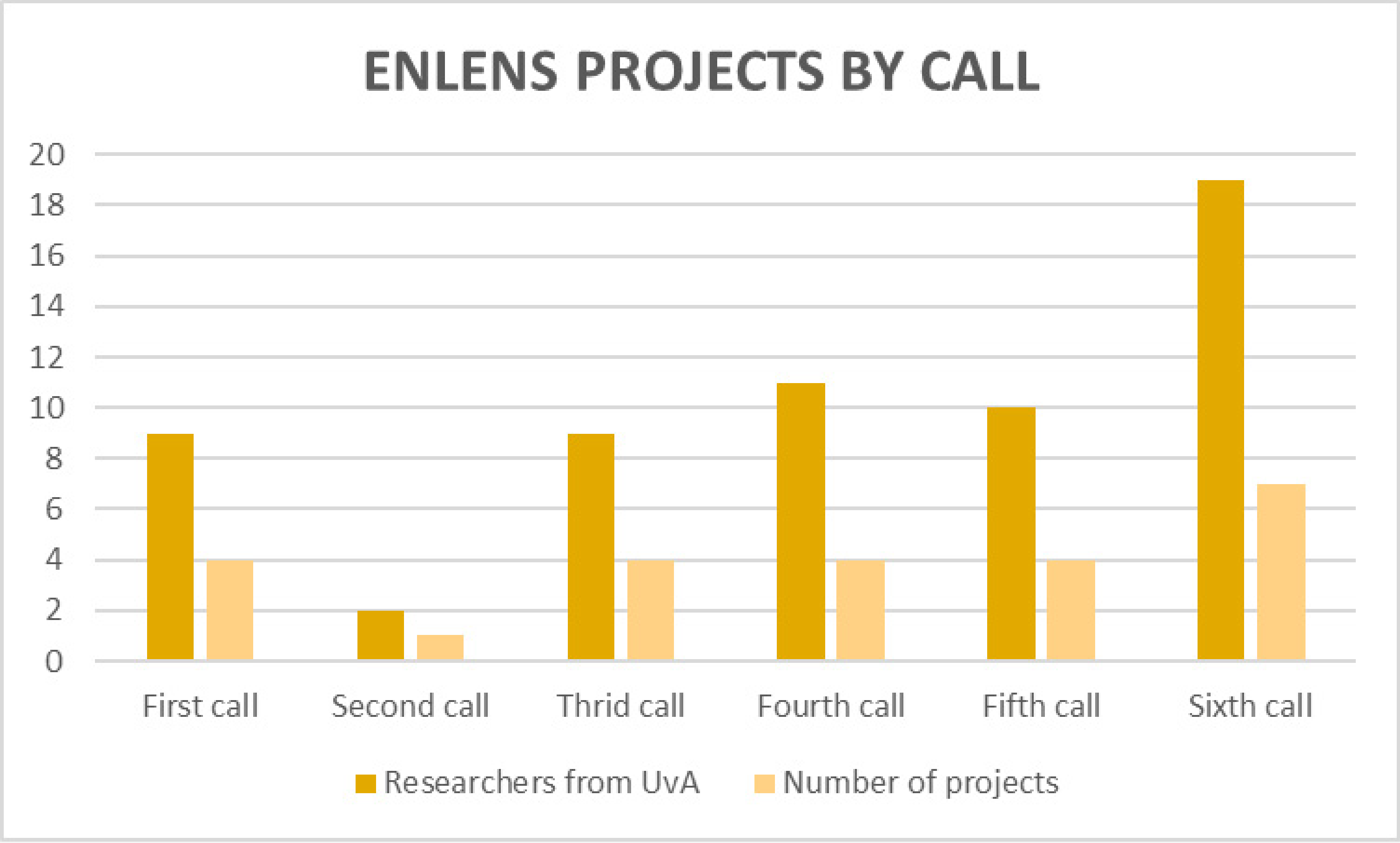
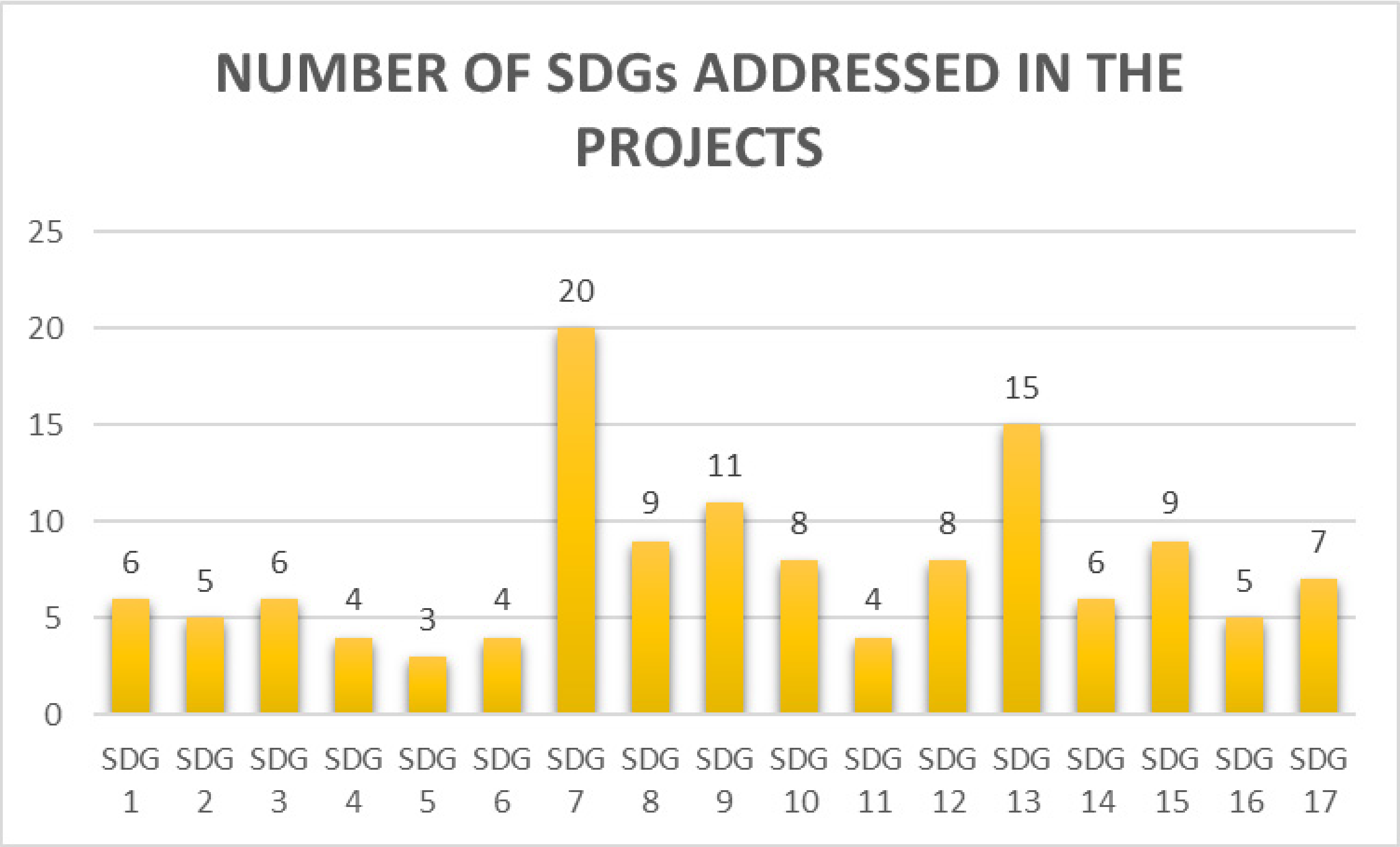
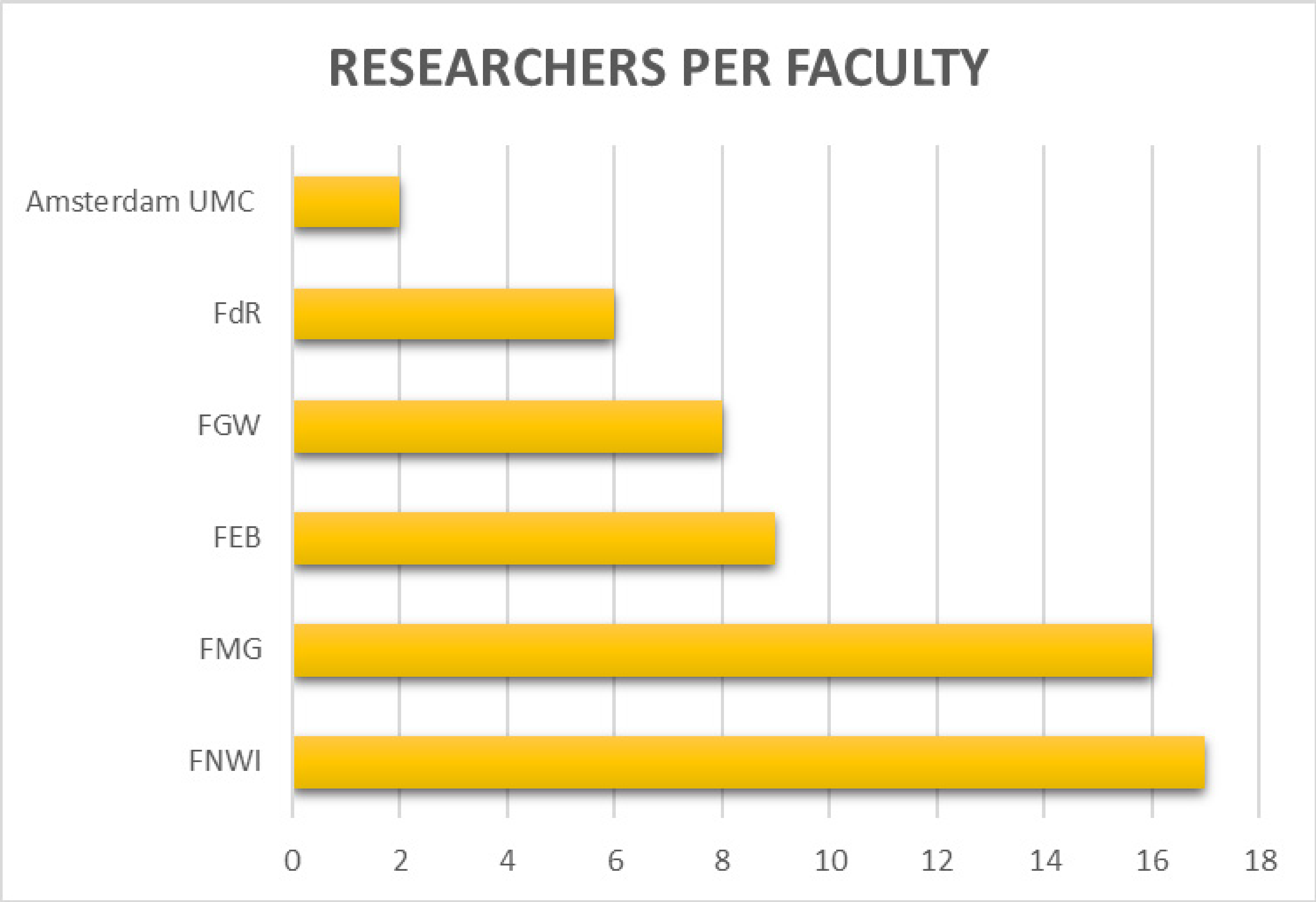


ENLENS MAINLING LIST





ENLENS in numbers



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Hydrogen across borders?

Marija Bartl (FdR)
Ans Kolk (FEB)
Bob van der Zwaan (FNWI)

The goal of this project is to explore how renewable hydrogen imports from Northern Africa can support the energy transition in the Netherlands and Europe, focusing on the trade-offs and synergies involved. Drawing on expertise in international political economy, sustainable energy, and transformative governance, the project investigates the technological, legal, business, and geopolitical dimensions of cross-regional hydrogen partnerships. The study connects global hydrogen cooperation to SDG 1, SDG 2, SDG 3, SDG 4, SDG 7, SDG 13, and SDG 17.

Mining for energy transition: Understanding drivers of (un)sustainable mineral extraction

Barbara Hogenboom (FGw)
Harry Seijmonsbergen (FNWI)

The goal of this project is to understand how societal drivers shape (un)sustainable mining practices and how these practices impact land use, land cover, and the environment over time. Through a combination of qualitative stakeholder analysis and quantitative spatio-temporal modelling, the project aims to identify pathways to reduce the negative externalities of mining activities linked to the energy transition. Insights will be shared with researchers, policymakers, and local stakeholders in both Chile and the Netherlands. The study connects responsible mining and energy transition strategies to SDG 7, SDG 8, SDG 10, SDG 13, SDG 14, SDG 15, and SDG 16.

How much biomass for the Dutch heat and electricity sector – and which, from where?

Elisabeth H. Krueger (FNWI-IBED)
John Grin (FMG/AISSR)

The goal of this project is to clarify the complex role of biomass in a future net-zero, gas-free energy system by examining specific biomass flows, their origins, and their end-uses. Given the contested nature of biomass, especially due to its global trade dynamics and environmental impacts, the project aims to bring analytical clarity to policy and public debates. By focusing on the spatial and functional links between biomass sources and applications, it will help inform more sustainable and equitable energy choices. The study connects bioenergy transition strategies to SDG 2, SDG 14, and SDG 15.

Transitional Waters: The Port of Amsterdam and the Energy Transition

Jeff Diamanti (FGw)
Joyeeta Gupta (FMG)

The goal of this project is to examine the role of the Port of Amsterdam as a key site in the Netherlands' and EU's energy transition, balancing its status as Europe's largest gasoline terminal with its emerging role in offshore wind development. Through a situated case study, the project maps the flows of power, value, and infrastructure that shape the transition, linking local ecologies to global energy futures and informing broader ENLENS ambitions. The study connects port-based energy transformation to SDG 4 and SDG 7.

The Cost of Large-Scale Transitions: Introducing Effective Targeted Incentives

Vítor V. Vasconcelos (FNWI)

Shaul Shalvi (FEB)

Sara Constantino (Northeastern University, USA)

The energy transition in the Netherlands (and Europe) is a crucial step towards achieving a more sustainable and environmentally responsible future. This research on targeted interventions can play a vital role in facilitating this transition by identifying effective strategies for promoting the adoption of renewable energy technologies. By focusing on geographical trade-offs, synergies, and optimal solutions, the study aims to maximize the positive impact of sustainable energy adoption across diverse regions and communities. The project connects regional energy transition strategies to SDG 7, SDG 9, SDG 12, and SDG 13.

Optimizing Energy Efficiency and Policy for Green Hydrogen Production and Market Adoption

Amanda Garcia (FNWI)

Panikos Georgallis (FEB)

This scientific inquiry focuses on investigating the enhancement of energy efficiency in green hydrogen production through paired electrolysis. It develops a broader discussion that extends beyond technical efficiency to include commercialization prospects and market take-off potential. This work aims to support the scientific community in advancing sustainable, energy-efficient, and policy-relevant solutions that promote innovation and accelerate the energy transition. The project connects hydrogen innovation to SDG 7, SDG 8, SDG 9, and SDG 13.

Climate finance and energy minerals

Ruth Carlitz (FMG)

Michelle Westermann-Behaylo (FEB)

We adopt a systems approach to study how the politics of implementation influence responsible energy mineral production and access to modern energy services in Sub-Saharan Africa, with a focus on clean energy. The project analyzes economic and financial systems, including the flow of goods and investments in renewable technologies. To understand investment patterns in energy minerals and renewables, we examine governing policies and public-private commitments aimed at mitigating climate change. This is particularly important given the shortcomings of past efforts to improve living and working conditions in the region. The project connects clean energy governance in Sub-Saharan Africa to SDG 1, SDG 7, SDG 13, and SDG 17.

Sustainable aviation fuels from waste

Shiju Raveendran (FNWI)

Vittoria Scalera (FEB)

Sara Solis (Circular Economy Lead, Schiphol Airport)

This project, in collaboration with Schiphol Airport, explores the implementation of an original circular business model for the energy transition, combining technical and business perspectives. The technical component investigates the feasibility of producing sustainable aviation fuels (SAF) from mixed waste, while the business component focuses on building a circular model with external partners. Using waste for SAF production, rather than incineration, is essential for achieving Schiphol's goal of net-zero emissions by 2050. The project connects circular innovation in aviation to SDG 7, SDG 11, SDG 12, SDG 13, and SDG 17.

Energy transition in Ethiopia

Lies Jacobs (FNWI-IBED)
Nicky Pouw (FMG)
Elisabeth Krueger (FNWI-IBED)
Etefa Dinssa (Mekelle University)

This project proposes an interdisciplinary approach to understand how various shocks impact national and regional energy access, with a focus on the ripple effects across the Sustainable Development Goals. By prioritizing affordable and clean energy for marginalized communities, the project aims to inform future policies through improved mapping of household energy needs, anticipating disruptions, and addressing complex SDG interdependencies to reduce trade-offs. The project connects inclusive energy access and resilience planning to SDG 3, SDG 5, SDG 7, SDG 13, SDG 14, and SDG 15.

Data-driven optimization of policy strategies for energy transition and sustainable development methodologies

Jocelyne Vreede (FNWI)
Luc Fransen (FMG)

We plan to use data science approaches and policy studies to optimize the Value Chain Assessment, which integrates literature on the green hydrogen transition to assess its impact across all SDGs. By incorporating automated search and machine learning, the project enables more detailed impact analysis, while policy studies strengthen the evaluation of policy effectiveness related to the energy transition and value chains. The results support both academic and policy communities. The project connects data-driven energy transition research to all 17 SDGs.

Exploring energy justice and multi-species rights in Southern Africa: a comparative study drawing on indigenous perspectives

Margaretha Wewerinke-Singh (FdR)
Eileen Moyer (FMG)
Linda Musariri (FMG)

This project explores how energy justice and multi-species rights are understood and conceptualised by different indigenous groups in Southern Africa. Focusing on three comparative case studies—the Boegoebaai green hydrogen project in South Africa, lithium mining in Zimbabwe, and a desalination project in Namibia—the research examines how renewable energy development intersects with indigenous rights and ecological dispossession. The aim is to reveal both conflicts and synergies between energy transitions, indigenous sovereignty, and the rights of nature. The project connects indigenous perspectives on energy justice to SDG 6, SDG 7, and SDG 15.

Carbon capture and utilization – the potential of keeping CO₂ as feedstock in the Netherlands

Sonja Pullen (FNWI)
Mark van der Veen (FEB)

Utilization of CO₂ ranges from its direct use in greenhouses to its conversion into base chemicals such as methanol, formic acid or cyclic carbonates. We will focus our study on the latter part, in order to investigate what the minimum requirements are in terms of efficiency, stability and scale for novel catalytic processes for converting CO₂ into these chemicals in order to be competitive with exporting captured CO₂ and storing it underground. This project contributes to SDG 8, SDG 9 and SDG 13.

Understanding the Just Transition through the lenses of Wellbeing, Justice, and Equity

Matteo Fermeglia (FGw)
Colin Hickey (FNWI)
Aslin Unan (FGw)
Christina Eckes (FdR)

This project investigates how the concept of a just transition is understood and implemented in both South African and European policy contexts, focusing on its intersections with ecological integrity, human well-being, and climate justice. By addressing the tension between energy access and the health of both people and ecosystems, the project aims to contribute to a more equitable global energy transition. It employs an interdisciplinary approach combining law and policy, ethics, and political science. The project connects just transition frameworks to SDG 3, SDG 7, and SDG 13.

Greenwashing in green finance: perspectives from regulators and regulatees

Catherine Wong (FMG)
Kati Cseres (FdR)

The goal of this study is to understand how EU lawmakers, regulators, bankers, and asset managers perceive and respond to greenwashing in the context of sustainable finance. As green finance has expanded rapidly, incidents of greenwashing have tripled since 2012, posing reputational, operational, and financial risks. Although the EU has introduced regulatory frameworks such as the EU Taxonomy, SFDR, CSRD, and CRR, key challenges persist, including data quality issues, definitional ambiguity, and diverging sustainability concepts among stakeholders. The study connects the world of finance to SDG 7, SDG 12, and SDG 13.

Risk Networks of Renewable Energy Markets

Sven Karbach (FNWI)
Simon Trimborn (FEB)

The goal of this research is to ensure affordable and sustainable energy during the transition to a low-carbon future by managing supply risks in European power markets. Using an interdisciplinary approach that integrates stochastic modeling, econometrics, and network analysis, the project maps power price dependencies across EU countries. By understanding how price shocks and risks spread across borders, the research aims to improve pricing accuracy, investment certainty, and grid stability. The study connects the energy transition to the SDG 7, SDG 9, and SDG 13.

The green finance arbitrage of poor environmental performers: legal and financial perspectives

Edoardo D. Martino (FdR)
Enrico Perotti (FEB)
Yasmine van der Straten (FEB)

This project investigates the problem of green finance arbitrage, where financial frictions and fragmented legal frameworks enable environmentally poor-performing firms—such as fossil fuel companies—to delay genuine energy transitions while remaining formally compliant with sustainability regulations. Adopting an interdisciplinary approach that combines corporate finance theory and legal analysis, the research maps how firms exploit regulatory inconsistencies across financial sectors and jurisdictions to secure favorable financing without meaningful decarbonization. The study connects the energy transition to SDG 8, SDG 9, and SDG 16.

Digital infrastructures and geo-economic competition through the lens of the energy transition

Milan Babic (FMG)
Niels ten Oever (FGw)
Fieke Jansen (FGw)

The goal of this project is to understand how geo-economic competition over submarine cable ecosystems affects Europe's energy transition. This interdisciplinary study brings together perspectives from digitalization, energy transition, and geopolitical analysis. By mapping ownership structures and financial data, and developing case studies of landing stations, the project examines how infrastructure competition influences the speed and equity of Europe's shift to sustainable energy. The study connects the energy transition to SDG 7, SDG 9, and SDG 13.

Engaging Citizens with Sustainable Solutions: Exploring the Effects and Professional Perceptions of Solutions Journalism in the Context of the SDGs

Andreas Schuck (FMG)
Alice Fleerackers (FGw)

The goal of this project is to investigate whether and how "solutions journalism" can more effectively engage citizens with complex societal challenges related to the energy transition and the SDGs. The study examines audience responses as well as journalists' perceptions of professional value in covering SDG-related topics. Using a mixed-methods approach - including media effects experiments, qualitative interviews, and stakeholder outreach - the project explores how solutions journalism influences public understanding, emotions, and engagement around issues such as clean energy, climate action, inequality, and global interdependencies. The study connects journalism and public engagement to SDG 7, SDG 10, SDG 13, and SDG 17.

Minimal and Maximal Thresholds for a Just Transition

Colin Hickey (FNWI)
Crelis Rammelt (FMG)
Fabian Dablander (FNWI)

The goal of this project is to investigate how defining minimum and maximum energy thresholds can support a fair, sustainable, and politically viable energy transition. The project quantifies selected threshold principles using adapted Earth system models and assesses public attitudes through nationally representative surveys in the Netherlands and the US, with a focus on perceived fairness and policy support. The study connects the energy transition to SDG 1, SDG 7, SDG 8, SDG 10, SDG 12, SDG 13, SDG 14, and SDG 15.

Optimizing Carbon Border Adjustments: A Microsimulation Approach to Regulatory Compliance and Global Decarbonization

Debraj Roy (FNWI)
Geraldo Vidigal (FdR)

The goal of this project is to assess how the EU's Carbon Border Adjustment Mechanism (CBAM) can be implemented in a way that balances regulatory effectiveness, economic fairness, and global climate justice. By integrating real-time emissions data from Climate TRACE with a microeconomic simulation model, the project identifies vulnerabilities in global supply chains, calculates sector-specific tipping points for carbon pricing, and flags regions where renewable energy constraints may affect compliance. The study connects carbon regulation and global trade to SDG 7, SDG 8, SDG 9, SDG 13, and SDG 17.

The Politics of Environmental Market Making in the European Union

Peter-Wim Zuidhof (FGw)
Giacomo Tagiuri (FdR)

The goal of this project is to critically examine the rise of environmental market making as a key strategy in the EU's energy transition policies. This interdisciplinary project investigates how environmental markets are designed, who gets to participate, how entitlements are distributed, and how these processes shift sides of political contestation. Case studies include the EU Hydrogen Strategy and the legal infrastructures shaping environmental markets. The study connects market-based environmental governance to SDG 1, SDG 7, SDG 9, SDG 10, SDG 11, SDG 12 and SDG 13.

Trade-offs between Mental Health and Energy Transitions in Vulnerable Groups

Reinout Wiers (FMG)
Claudi Bockting (Amsterdam UMC)
Adam Finnemann (Amsterdam UMC)

The goal of this project is to investigate how energy transitions affect mental health, with a focus on identifying geographic and demographic vulnerabilities within Europe. To achieve this, the project uses advanced geospatial modeling to develop detailed vulnerability profiles and maps, drawing on socio-demographic and mental health data from the UK Biobank and Amsterdam UMC. The findings inform future collaborative projects on climate vulnerability in the Netherlands and Brazil. The study connects the energy transition and public health to SDG 3 and SDG 7.

Uncovering Causal Pathways of Polarization of Climate Change Attitudes towards Climate Policy: The Role of Government and Public Trust

Lourens Waldorp (FMG)
 Vítor V. Vasconcelos (FNWI)
 Sara Constantino (Stanford University)

The goal of this project is to understand how government interventions, personal experiences, and media coverage influence public polarization around climate change and energy transition policies. Using advanced causal inference methods on a large longitudinal dataset, the project investigates how perceptions of government efficacy and media narratives—especially after climate-related disasters—shape public opinion. The findings will support policymakers and communicators in designing interventions that reduce polarization, strengthen trust, and promote cohesive governance of the energy transition. The study connects climate communication and public trust to SDG 7, SDG 13, and SDG 16.

Energy transition infrastructures and the displacement of populations in Europe

Huub Dijstelbloem (FGw)
 Darshan Vigneswaran (FMG)
 Enrike van Wingerden (FMG)
 Vittoria Scalera (FEB)
 Colin Hickey (FNWI)

The goal of this project is to investigate how energy transition infrastructure in Europe creates new forms of displacement, immobility, and resistance among affected communities. Through four European case studies, the project examines the social and environmental impacts, community responses, and the strategies adopted by governments and industries. It develops a framework to understand the tensions between mobility, place attachment, and infrastructural development in the context of the energy transition. The study connects energy justice and human mobility to SDG 1, SDG 6, SDG 7, SDG 8, SDG 9, SDG 10, SDG 13, and SDG 15.

Projects – Overview



Energy Solutions

- Mining for energy transition: Understanding drivers of (un)sustainable mineral extraction
- How much biomass for the Dutch heat and electricity sector – and which, from where?
- Climate finance and energy minerals
- Data-Driven Optimization of Policy Strategies for Energy Transition and Sustainable Development Methodologies
- Greenwashing in green finance: perspectives from regulators and regulatees
- The green finance arbitrage of poor environmental performers: legal and financial perspectives
- The Politics of Environmental Market Making in the European Union
- Digital infrastructures and geoeconomic competition through the lens of the energy transition



Sustainability & Resources

- Hydrogen across borders?
- Optimizing Energy Efficiency and Policy for Green Hydrogen Production and Market Adoption
- Carbon capture and utilization – the potential of keeping CO₂ as feedstock in the Netherlands
- Sustainable aviation fuels from waste
- Optimizing Carbon Border Adjustments: A microsimulation approach to Regulatory Compliance and Global Decarbonization
- Risk Networks of Renewable Energy Markets
- Energy transition infrastructures and the displacement of populations in Europe



Social & Justice

- Transitional Waters: The Port of Amsterdam and the Energy Transition
- The Cost of Large-Scale Transitions: Introducing Effective Targeted Incentives
- Energy transition in Ethiopia
- Exploring energy justice and multi-species rights in Southern Africa: a comparative study drawing on indigenous perspectives
- Understanding the Just Transition through the lenses of Wellbeing, Justice, and Equity
- Engaging Citizens with Sustainable Solutions: Exploring the Effects and Professional Perceptions of Solutions Journalism in the Context of the Sustainable Development Goals
- Minimal and Maximal Thresholds for a Just Transition
- Trade-offs between mental health and energy transitions in vulnerable groups
- Uncovering Causal Pathways of Polarization of Climate Change Attitudes towards Climate Policy: The Role of Government and Public Trust

Activities

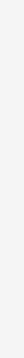


ENLENS has dedicated effort to numerous activities that align with its primary objective:

- **Future of Energy seminar series**
- **Development of methodologies**
- **Events and workshops**
- **Courses for students**
- **Publications**
- **Media (videos) and Website**
- **Partnerships for collaboration**



IASA



SDG - FOR

A circular logo composed of 17 colored segments arranged in a ring. The colors include shades of blue, green, yellow, orange, red, and purple. The segments are of varying widths and are arranged in a clockwise sequence starting from the top.



FUTURE OF ENERGY Seminar



Joyeeta Gupta - FoE Seminar



Rick van der Ploeg - FoE Seminar



André Nollkaemper - FoE Seminar

FUTURE OF ENERGY Presentations

- Carbon pricing, green growth and the energy transition (06.10.2025) - **Debraj Roy**
- Modelling macro-economic impacts of the energy and industry transition (06.10.2025) - **Ahmed Elberry**
- Demand side of energy transition: insights from models and data (15.09.2025) - **Francesco Dalla Longa**
- Sociotechnical imaginaries and expectations of CO2 utilization (15.09.2025) - Sanghamitra Chakravarty
- Fusion energy: state-of-the-art and role in climate change control (12.05.2025) - **Aart Kleijn**
- A business perspective of CCS deployment in Europe (12.05.2025) - **Mark van der Veen**
- Understanding bird movement for wind energy development (14.04.2025) - **Judy Shamoun-Baranes**
- Use of water and biomass in the energy transition: the case of Ethiopia (14.04.2025) - **Etefa Dinssa**
- Using AI to Design New Materials for the Energy Transition (10.03.2025) - **Max Welling**
- The protein transition: politics of meat and dairy consumption (10.03.2025) - **Willem Boterman**
- New developments in photonics for solar energy technology (10.02.2025) - **Esther Alarcon Llado**
- A new energy model for analyzing European decarbonisation pathways (10.02.2025) - **Steven Salim**
- Energy applications of metal-organic frameworks (13.01.2025) - **Stefania Grecea**
- The technopolitics of making a hydrogen market in the EU (13.01.2025) - **Peter-Wim Zuidhof**
- Reducing greenhouse gas emissions in the medical sector (09.12.2024) - **Niek Spera Weiland**
- The cost of large-scale transitions: introducing targeted incentives (09.12.2024) - **Vitor Vasconcelos**
- Responsibly mining ET minerals: The role of digital technology (11.11.2024) - **Michelle Westermann-Behaylo**

FUTURE OF ENERGY Presentations

- Making agriculture more sustainable: a climate and energy perspective (11.11.2024) - **Michel Haring**
- The energy transition and international justice (14.10.2024) - **Christina Eckes**
- CO2 capture, storage and conversion in the Netherlands (14.10.2024) - **Sonja Pullen**
- Celebrating 5 years Future of Energy and mid-term ENLENS (16.09.2024) - **Bob van der Zwaan**
- Tracking SDG7: progress according to the custodian international agencies (16.09.2024) - **Ute Collier**
- Maximizing the impact of sustainable finance and climate philanthropy (13.05.2024) - **Paul Smeets**
- The complex causation problem in international law of climate change (13.05.2024) - **André Nollkaemper**
- A game-theoretic approach towards climate change control (15.04.2024) - **Florian Wagener**
- The role of Perovskite PV and wind power in the energy transition (15.04.2024) - **Lucie McGovern**
- Oil & gas (multi)nationals' response to global climate decision-making (11.03.2024) - **Nina Herzog-Hawelka**
- The role of sustainable (aviation) fuels in the energy transition (11.03.2024) - **Shiju Raveendran**
- The energy transition through a climate law and governance lens (12.02.2024) - **Matteo Fermeglia**
- A complexity study of electric vehicle charging for transport decarbonisation (12.02.2024) - **Michael Lees**
- Why climate policy is a mess (15.01.2024) - **Rick van der Ploeg**
- The future of plastic high potential polyesters from biomass and CO2 (15.01.2024) - **Gert-Jan Gruter**
- When does climate finance respond to local needs? (11.12.2023) - **Ruth Carlitz**
- Social tipping dynamics to accelerate the energy transition (11.12.2023) - **Floor Alkemade** (with Bart Bruin, Francesco Pasimeni and Robert Wade)

FUTURE OF ENERGY

Presentations



FOE - IAS

- Energy production and chemical emissions (13.11.2023) - **Annemarie van Wezel**
- Realising human rights in the global energy transition (13.11.2023) - **Margaretha Wewerinke-Singh**
- Avoiding sustainability trade-offs (in the energy transition) (16.10.2023) - **Elizabeth H. Krueger**
- Climate change, environmental degradation, energy transition and international history (16.10.2023) - **Ruud van Dijk**
- Leaving fossil fuels underground (11.09.2023) - **Joyeeta Gupta**
- Large-area solar power enabled by perovskites (11.09.2023) - **Bruno Ehrler**
- Energy transition and field philosophy (15.05.2023) - **Jeff Diamanti**
- Towards a sustainable society? (15.05.2023) - **Peter van Dam**
- Energy and climate economics how to get the carbon price right (17.04.2023) - **Joeri Sol**
- (Un)sustainable mineral mining in South America (17.04.2023) - **Harry Seijmonsbergen** and **Barbara Hogenboom**
- Uncertainties in simulations for climate and renewable energy (13.03.2023) - **Daan Crommelin**
- The European central bank's energy policy (13.03.2023) - **Jens van't Klooster**
- Ethics, the future of energy and climate policy (13.02.2023) - **Colin Hickey**
- The EU strategy on hydrogen production in North Africa (13.02.2023) - **Julian Morgan**
- Developments in pro-environmental behavior research (16.01.2023) - **Cameron Brick**
- Towards a hydrogen economy - New chemistry for the energy transition (16.01.2023) - **Bas de Bruin**

FUTURE OF ENERGY

Presentations



FOE - IAS

- Climate cooperation through more transparency (14.11.2022) - **Astrid Dannenberg**
- Twin challenges of the energy transition and circular economy (14.11.2022) - **Chris Slootweg**
- The pathways and challenges of energy transition in the global south (10.10.2022) - **Drielli Peyerl**
- The role of consumer in the energy transition (10.10.2022) - **Kati Cseres**
- Rethink all (21.06.2022) - **Ruud Koornstra**
- Using the green in greenhouse (21.06.2022) - **Tijmen Bakker**
- C5: Carbon cycle, chemistry and climate change (19.04.2022) - **Jan van Maarseveen**
- Methane emissions - what is the systemic theory of change? (19.04.2022) - **Roland Kupers**
- "A realistic view of greenhouse gas emissions and climate change in the coming decade (14.02.2022) - **Gadi Rothenberg**
- Climate change, growth and the environment (14.02.2022) - **Sweder van Wijnbergen**
- Timmerman's Dream: An energy partnership between North Africa and Europe (17.01.2022) - **Bob van der Zwaan**
- Photovoltaics: research developments and role in the energy transition (17.01.2022) - **Erik Garnett**
- Wind turbines, solar farms and house prices (24.02.2020) - **Martijn Drees**
- Solar fuels: what, why, how, and when? (24.02.2020) - **Joost Reek**
- Effects of the energy transition on nature (16.01.2020) - **Willem Bouten**
- Designing energy neutral cities (16.01.2020) - **John Grin**
- Reducing psychological distance to sustainable consumer energy use (09.12.2019) - **Frenk van Harreveld**
- Techno-economics of solar fuels (09.12.2019) - **Bob van der Zwaan**

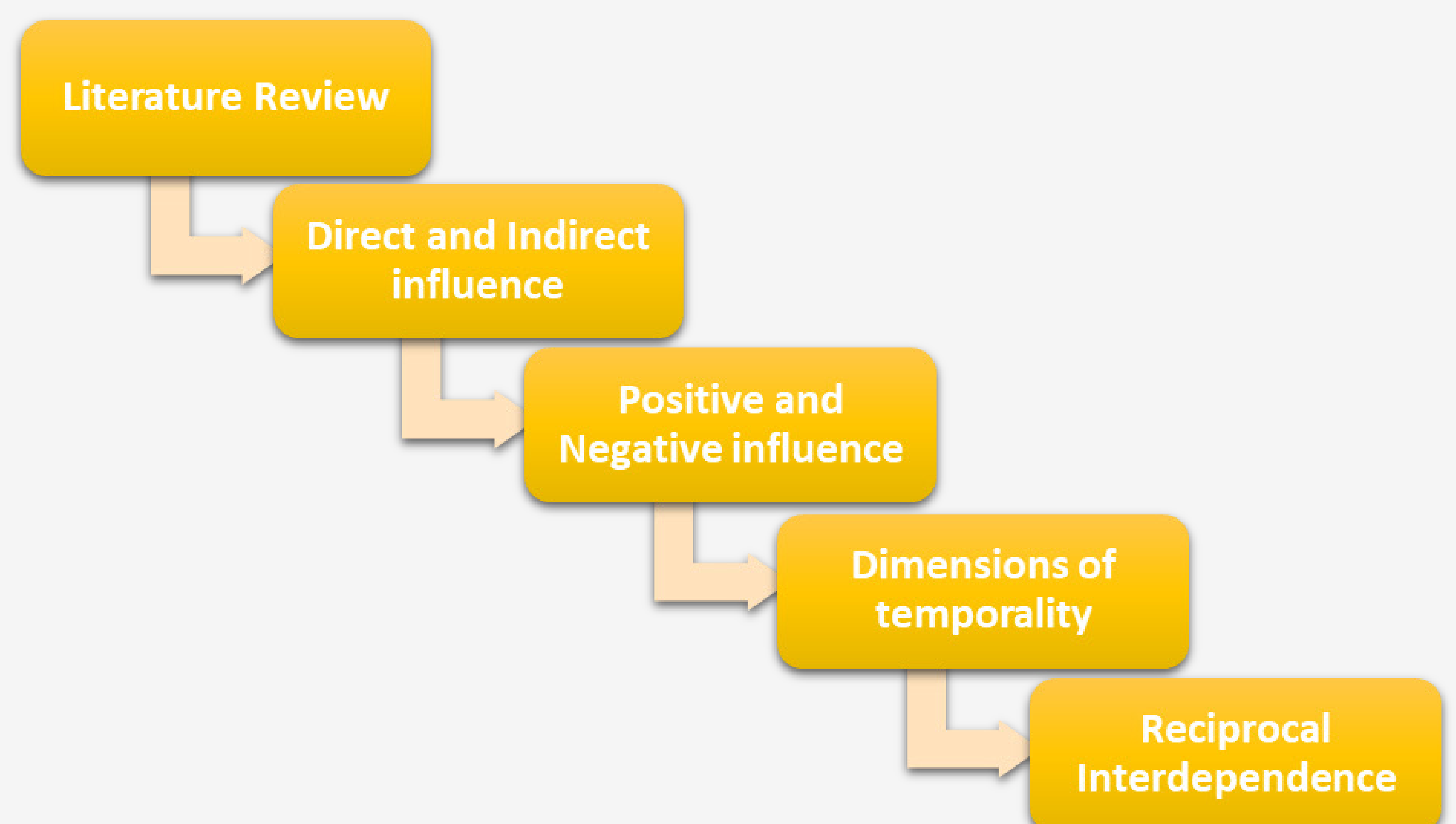


VALUE CHAIN ASSESSMENT

As part of the ENLENS project, the team developed a novel methodology called the Value Chain Assessment (VCA) to support the sustainable development of entire value chains (Peyerl & van der Zwaan, 2024). This methodology represents one of ENLENS's key outcomes and is adaptable to a wide set of value chains—from energy carriers to energy technologies such as renewable electricity generation or carbon dioxide capture and storage (CCS). The VCA was first applied to green hydrogen, and the results of this application were published in *Discover Sustainability*.

As a next step, the VCA methodology is adapted into a practical tool to enable broader use, not only within the university, but also by external stakeholders. This work is carried out as part of the project 'Data-Driven Optimization of Policy Strategies for Energy Transition and Sustainable Development Methodologies', coordinated by Jocelyne Vreede (FNWI) and Luc Fransen (FMG).

Value Chain Assessment (VCA): We employ five distinct steps to categorize how the value chain aligns with sustainable development through the SDG targets.



The five steps of the Value Chain Assessment methodology (VCA).



Launch of ENLENS

On 13 December 2022, the University of Amsterdam (UvA) officially launched its RPA ENLENS. The invited keynote was given by Shonali Pachauri, Principal Research Scholar of the Energy, Climate, and Environment Program at the International Institute for Applied Systems Analysis (IIASA), she spoke on the topic of 'How energy interlinks with sustainable development'. More than 70 people attended the launch of ENLENS.



Keynote lecture by Shonali Pachauri



ENLENS launch: panel discussion with UvA Rector and Deans

Launch of ENLENS Mid-term Report

On 16 September 2024, we celebrated five years of the Future of Energy seminar series and marked the launch of the Mid-term ENLENS Report. The event featured a keynote talk by Bob van der Zwaan, who presented the findings from the ENLENS mid-term report, reflecting on global progress and future challenges in the energy transition. As part of the same event, Ute Collier (International Renewable Energy Agency, IRENA) delivered a keynote lecture on 'Tracking SDG7: progress according to the custodian international agencies', offering valuable insights into the global status of access to affordable, reliable, sustainable, and modern energy.



Bob van der Zwaan presents the Mid-term ENLENS Report, followed by Ute Collier from IRENA on tracking progress towards SDG7



ENLENS Workshop

On 7 December 2023, we organized an event entitled 'ENLENS Workshop on Writing an Interdisciplinary Research Proposal.' The aim of this workshop was to encourage and explain how UvA researchers can submit proposals and facilitate networking between UvA faculties. In addition, we shared with the attendees inspiring examples of inter- and transdisciplinary research projects related to the energy transition and SDGs.

Course "Future of Energy"

From February to May 2025, in the new course "Future of Energy" born out of ENLENS and FoE, bachelor students at the University of Amsterdam explored how we can move away from fossil fuels, use new technologies like hydrogen, and design energy-neutral cities. The course looked not only at the science part of the subject but also at the policy, financial, legal, and ethical sides of the energy transition. The Future of Energy course ended with a clear takeaway: the shift to sustainable energy is urgent and complex, but feasible.

Led by 10 expert lecturers, the course brought together students from different studies and backgrounds, creating a space for interdisciplinary learning and collaboration. More than just gaining knowledge, students learned to think critically about one of the biggest challenges of our time.



ENLENS media

Since May 2024, we have coordinated and created ENLENS videos to accomplish a clear goal: to showcase how each UvA researcher and ENLENS project contributes to advancing the SDGs and influencing the energy transition. Additionally, these videos highlight UvA's commitment to implementing the SDGs. Each video, lasting one minute on average, serves as a direct means of communication for disseminating ENLENS information.



Ruth D. Carlitz - Project "Climate finance and energy minerals: A systems approach"



Michelle Westermann-Behaylo - Project "Climate finance and energy minerals: A systems approach"



ENLENS Website

In January 2023, we launched the ENLENS website, updating it with information on projects, activities, publications, and calls for proposals ever since. This website is one of the main tools used to spread and inform the community about ENLENS' activities. Moreover, it serves as a historical archive documenting the evolution of this RPA.



ENLENS website

For more information, see:
<https://www.uva.nl/en/shared-content/zwaartepunten/en/energy-transition-through-the-lens-of-sustainable-developments-goals/enlens.html>



Hy-SUCCESS - NWO

In January 2024, Frenk van Harreveld, Bob van der Zwaan and Drielli Peyerl represented the University of Amsterdam during the planning of Hy-SUCCESS - NWO. The Hy-SUCCESS consortium represents a collaboration of ten universities, two research institutes, five universities of applied sciences, one research and technology organization, and three industry partners. The Hy-SUCCESS consortium follows a transdisciplinary approach by study all non-technical aspects of hydrogen development. The drivers and complementary expertise of the consortium members enable us to gain a comprehensive view of the non-technical aspects of green hydrogen diffusion.

Involvement in UvA-wide activities

- Bob van der Zwaan, Ans Kolk and John Grin are directly involved as steering committee members in the UvA wide new climate institute SEVEN led by Andre Nollkaemper.
- Bob van der Zwaan, Ans Kolk, Marija Bartl, Barbara Hogenboom, Coyan Tromp, John Grin and Drielli Peyerl are involved in the activities of UvA's Sustainability Platform.
- Barbara Hoogenboom and Ans Kolk are on the steering group of UvA's IP theme "Sustainable Prosperity".
- Through ENLENS, project for NWO & FAPESP (Brazil) accepted and will start in 2026, co-developed with ENLENS project "Trade-offs between mental health and energy transitions in vulnerable groups".
- Horizon Europe proposal CREDENCE submitted to European Commission (led by Margaretha Wewerinke-Singh and Bob van der Zwaan).
- Success of this RPA has led to creation of a "Future of Energy" pillar in UvA's climate institute SEVEN, to ascertain long-term embedding of ENLENS and FoE achievements.

Internships

From July to December 2023, in collaboration with the University of São Paulo, two PhD candidates, supported by the Brazilian government, completed an internship at the University of Amsterdam. Anna Luisa Abreu Netto has applied the VCA methodology for Carbon Capture and Storage (CCS), while Mariana Ramos has analysed the potential of the hydrogen storage in depleted offshore gas fields in Brazil.

Publications

- Peyerl, D.; van der Zwaan, B.. Aligning CBAM with SDGs. Sustainable Development. (In process for submission).
- Herbermann, J; van der Zwaan; Peyerl, D. BECCUS for sustainable development. (Submitted to Discover Energy))
- Netto, A. L. A.; Jacobi, P; van der Zwaan, B.; Peyerl, D. CCS for sustainable development. (Submitted to International Journal of Greenhouse Gas Control).
- Peyerl, D.; van der Zwaan, B. Green hydrogen for sustainable development. Discover Sustainability, 5, 199 (2024). <https://doi.org/10.1007/s43621-024-00374-4>
- Fontenelle, A. L.; Peyerl, D; Zacharias, L. G. L.; Clotta, M.; Moretto, E. M.. The role of the Sustainable Development Goals for better governance of Carbon Capture and Storage (CCS). Desenvolvimento e Meio Ambiente. 21, 2023, 478-498. (Published - Article)
- Pampus, M. van; Hogenboom, B.; Hoorn, C.; Seijmonsbergen, A. C. Uncertainties in the debate on the environmental impact of lithium brine extraction in the Salar de Atacama, Chile. Evolving Earth. 1, 2023, 100024. (Published - Article)
- Tilman, A. R.; Krueger, E. H.; McManus, L. C.; Watson, J. R. Maintaining human wellbeing as socio-environmental systems undergo regime shifts. Ecological Economics, Volume 221, 2024, 108194, <https://doi.org/10.1016/j.ecolecon.2024.108194>. (Published - Article)
- Mark M. Dekker. M. (et.al.), van der Zwaan, B. (...). Identifying energy model fingerprints in mitigation scenarios. Nature Energy. Volume 8 | December 2023 | 1395–1404. (Published - Article)

Publications

- Peyerl, D.; van der Zwaan, B. Mapping the interdependence of carbon-energy-industry through CBAM with SDGs. SRA Europe Benelux Conference 2025, Luxembourg. September 2025. (Abstract- Event)
- Peyerl, D.; van der Zwaan, B. Mapping the interdependence of carbon-energy-industry through CBAM with SDGs. 31nd Conference of ISDRS. Budapest, Hungary. July 2025. (Abstract- Event)
- Peyerl, D.; van der Zwaan, B. Mapping the interdependence of carbon-energy-industry through CBAM with SDGs. 16th International Sustainability Transitions Conference. Lisbon, Portugal. July 2025. (Abstract- Event)
- Peyerl, D.; van der Zwaan, B. Mapping the interdependence of carbon-energy-industry through CBAM with SDGs. 46th IAEE International Conference. Paris, France. July 2025. (Abstract- Event)
- Peyerl, D. Programme Committee for the NWO-NERA Energy Symposium. February 2025. (Member - Event)
- Peyerl, D. 16th Session of the UNECE team of specialists on Innovation and Competitiveness. Geneva, Switzerland. November, 2024. (Member - Event)
- Peyerl, D.; van der Zwaan, B. Green hydrogen for sustainable development. 42nd International Energy Workshop. Bonn, Germany. June 2024. (Abstract- Event)
- Peyerl, D.; van der Zwaan, B. Green hydrogen for sustainable development. H2 Science. Norway. June 2024. (Abstract- Event)
- Peyerl, D.; van der Zwaan, B. Green hydrogen for sustainable development. GlobalGoals2024. Utrecht, Netherlands. August, 2024. (Abstract- Event)
- Peyerl, D.; van der Zwaan, B. Green hydrogen for sustainable development. HIMS Symposium. Amsterdam, Netherlands. July, 2023. (Presentation - Event)

Publications

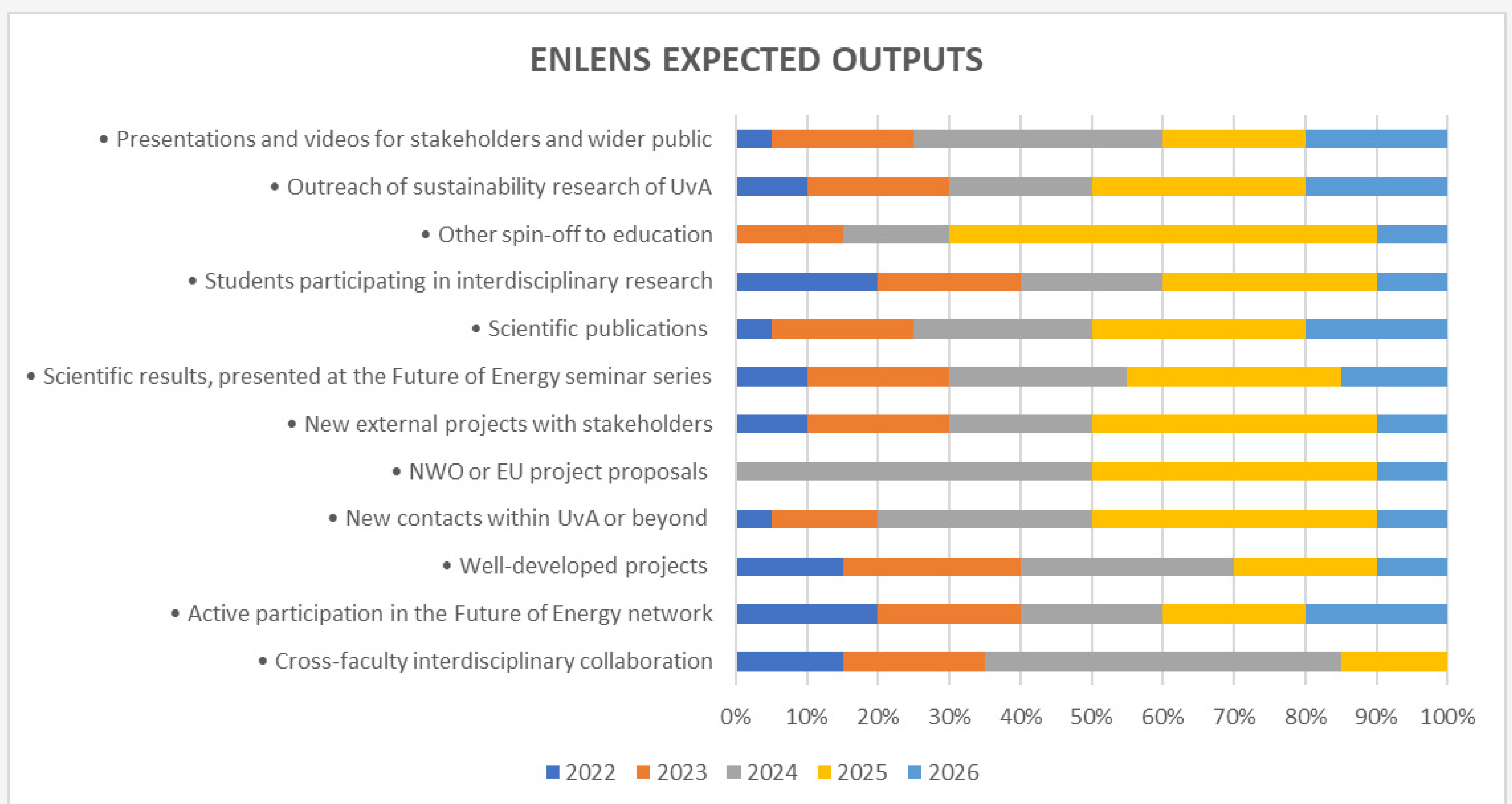
- Mittal, D., Constantino, S. M., & Vasconcelos, V. V. (2024). Anticonformists catalyze societal transitions and facilitate the expression of evolving preferences. *PNAS nexus*, 3(8), pgae302. (Article Published)
- Borges, H. M., Vasconcelos, V. V., Pinheiro, F. L. (2024). How social rewiring preferences bridge polarized communities. *Chaos, Solitons & Fractals*, Volume 180 (114594). <https://doi.org/10.1016/j.chaos.2024.114594>. (Article Published)
- Mittal, D., López, F. G. N., Constantino, S. M., Shalvi, S., Chen, X., & Vasconcelos, V. V. (2025). Targeted incentives for social tipping in heterogeneous networked populations. *arXiv preprint arXiv:2501.13623*. (Under review at PNAS)
- Pinheiro, F.L., & Vasconcelos, V.V. (2025). Heterogeneous update processes shape information cascades in social networks. *Scientific Reports*, 15, 13999. (Article Published)
- Maglicic, M., & Vasconcelos, V.V. (2025). Income inequality in the uptake of environmentally friendly products. *IScience*, 28, 4112277. (Article Published)
- Vasconcelos, V. V., Marquitti, F., Ong, T., McManus, L. C., Aguiar, M., Campos, A. B., ... & Zhan, Q. (2023). Rate-Induced Transitions in Networked Complex Adaptive Systems: Exploring Dynamics and Management Implications Across Ecological, Social, and Socioecological Systems. *arXiv preprint arXiv:2309.07449*. (Article Published)
- Van der Straten, Yasmine, Flooded. House or Underwater Mortgage? The Macrofinancial Implications of Climate Change and Adaptation (March 15, 2023). Tinbergen Institute Discussion Paper TI 2023-014/IV, <http://dx.doi.org/10.2139/ssrn.4393731>
- Boermans, Martijn Adriaan and Bun, Maurice and Van der Straten, Yasmine. Funding the Fittest? Pricing of Climate Transition Risk in the Corporate Bond Market (January 15, 2024). De Nederlandsche Bank Working Paper No. 797, <http://dx.doi.org/10.2139/ssrn.4696871>

Publications

- Carlitz, R. et.al.. Mapping the Climate Finance Tracking Knowledge Frontier – Research Report. 2025.
- Balducci, C. Exploring the lock-in of fossil fuel flows and financial flows in the port of Amsterdam – Research Report. 2024.
- Hauptmann, J. The financial role of fossil fuels in the port of Amsterdam – Research Report. 2024.
- Baggen, L. The Policy Framework Applicable to the Port of Amsterdam – Research Report. 2024.
- Grambs, S. Fossil fuel flows in the Port of Amsterdam. – Research Report. 2024.
- Gupta, J. et.al.. Beyond Impasse: Towards a Fossil Fuel Transshipment Phaseout at the Port of Amsterdam
- Gupta, J. et.al.. Transitional Waters: The Port of Amsterdam and the Energy Transition. – Research Report. 2024.
- The Role of the Port of Amsterdam in Leaving Fossil Fuels Underground. – Policy Brief. 2024.
- Fermeglia, M.. Understanding the ‘Just Transition’ and Unpacking Just Transition Frameworks in Diverse Jurisdictions”, 30 January, 2025, Cape Town University.
- Public lecture by Shami Chakrabarti: Surviving an Intemperate Climate, 23 April, 2025, SPUI25, Amsterdam (by Matteo Fermeglia, et.al.).
- Second project workshop, organised by Law School team: Climate litigation in Europe, sustainable development and justice, June 16, 2025, Amsterdam University (by Matteo Fermeglia, et.al.).
- IUCN Academy of Environmental Law Colloquium 2025 panel: “Just Transition through the Lenses of Access to Energy and Well-Being”, 1-4 July, 2025, Universidad Científica del Sur, Lima. (by Mateo Fermeglia, et.al.)
- Third project workshop: Understanding Climate Activism and State Responsibility: Reflections on Justice and Public Perception, forthcoming (13 October 2025). (by Matteo Fermeglia, et.al.).

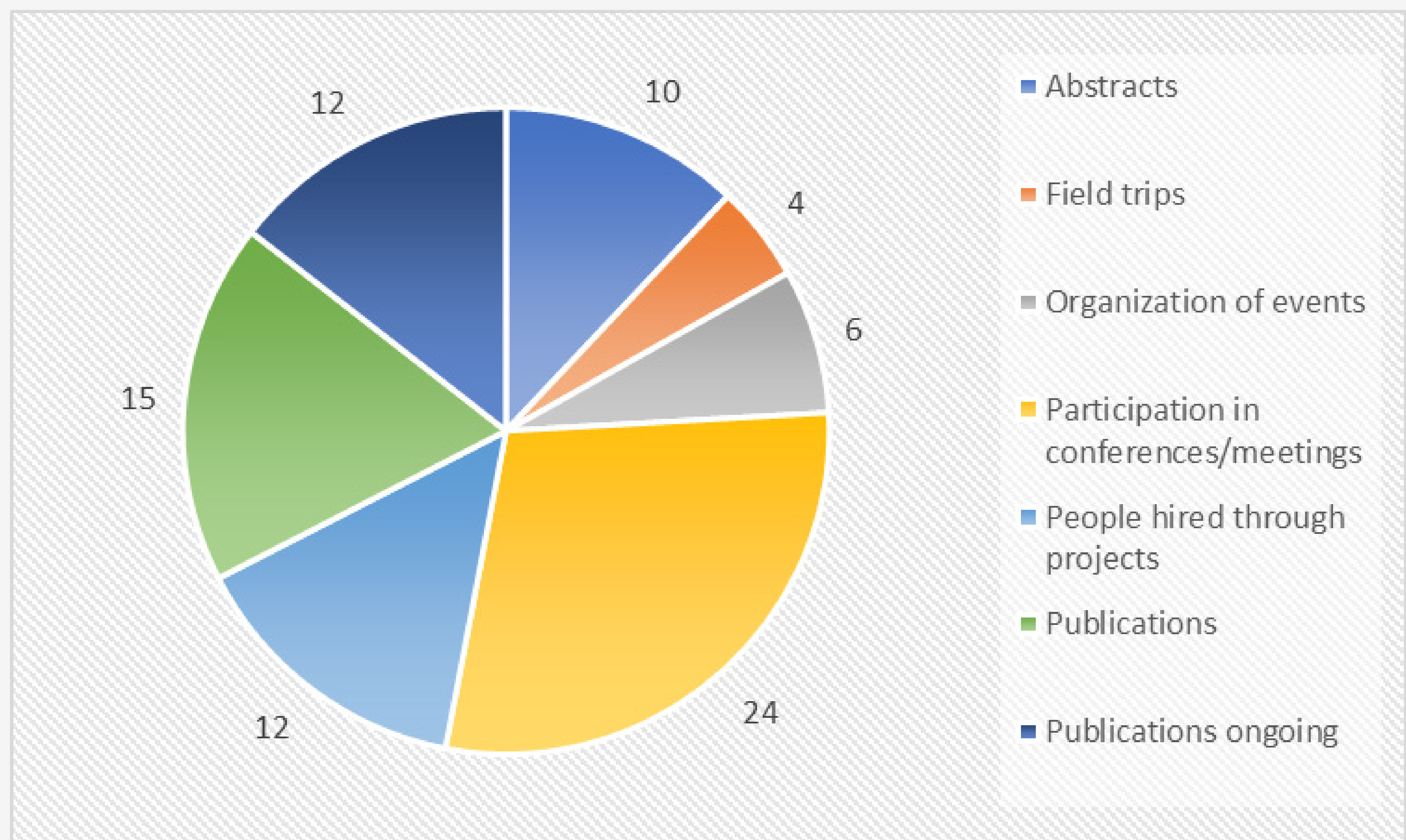
NEXT STEPS

This Third Progress Report demonstrates that the ENLENS project has achieved its proposed objectives, enhancing not only the academic community but also its capacity to accelerate the energy transition process and contribute to a better understanding of how to advance achieving the SDGs. Collaboration between UvA Faculties through ENLENS has shown how interdisciplinary cooperation can strengthen research and produce results with greater impact. Therefore, as the next steps for the final year of this RPA, ENLENS intends to continue the activities described in this report, collect the project's results, further expand its network and explanation of its achievements of ENLENS activities beyond the RPA's lifetime.



In the coming year, the ENLENS team full embeds interdisciplinary expertise on energy transition and sustainable development topics within the UvA community notably through UvA's new climate institute SEVEN. In this way, the network of researchers formed through ENLENS continues to facilitate dialogue and collaboration between UvA faculties, fostering the continuity of the established relationships based on the outcomes achieved.

ENLENS Impact



Most of the project's budget has been invested in supporting researchers to submit abstracts and attend conferences to present their work. A significant portion has also been allocated to taxes and publication fees for journal articles. The majority of ENLENS funding has been directed toward these activities.

In addition, funds have been used to hire Master's students, support PhD candidates and postdoctoral researchers, which has also contributed to increasing participation in academic events. Part of the budget has also been spent on field trips. Furthermore, both international and national events have been organized as part of the project's activities, and part of them connect with SEVEN.

