

## ENLENS: Energy Transition Through the Lens of SDGs

1. **Title:** Climate finance and energy minerals: A systems approach
2. **Name main applicant:** Ruth D. Carlitz ([r.d.carlitz@uva.nl](mailto:r.d.carlitz@uva.nl)), assistant professor, Faculty of Social and Behavioural Sciences). **Co-applicants:** Michelle Westermann-Behaylo ([m.westermann@uva.nl](mailto:m.westermann@uva.nl)), assistant professor, Faculty of Economics and Business).

### 3. Societal case

The transition to clean energy, crucial for addressing climate change (SDG 13) and promoting economic growth and human development (SDG 7), disproportionately affects the Global South. In the shift toward sustainable energy sources, the critical minerals market is projected to reach over 30 million tonnes by 2050 [1]. Accessing critical minerals — a substantial amount of which are located in Sub-Saharan Africa — brings new challenges to ensuring energy security and avoiding energy poverty (SDG 7 and 1) [2, 3]. The supply chain for essential energy minerals has also been linked to violence and human rights abuses [4]. Wealthy nations are working on systems to monitor and ensure responsible mineral supply chains, while also allocating millions of Euros in “climate finance” to develop renewable energy abroad (SDG 17). These endeavors aim to reduce emissions, alleviate energy poverty, and establish sustainable energy sources for export [5,6]. However, success hinges on political will to confront entrenched interests that resist change in many countries. Our research will delve into Sub-Saharan Africa’s economic and political systems, shedding light on the energy transition’s processes and impacts, revealing tradeoffs, and generating policy insights. Thus, overcoming critical minerals shortages is key to achieving a sustainable energy transition.

### 4. Scientific case

We adopt a systems approach to study how the politics of implementation affect responsible energy mineral production and access to modern energy services in Sub-Saharan Africa, emphasizing clean energy. We analyze economic and financial systems, including the flow of goods and investments in clean energy tech. Our core research questions are: 1) “How can supply chain tracking enhance responsible energy mineral production?” and 2) “How can investment in the renewable energy sector be leveraged to maximize its potential?”. To understand investment paths in renewables and energy minerals, we scrutinize governing policies, and commitments from businesses and government to effectively mitigate climate change’s impacts. This is vital as past efforts often fell short, especially in improving living and working conditions. Our methodology merges social science and economics approaches, analyzing policies, the distribution of funds, adoption of production tracking tech, trends in (renewable) energy consumption in recent decades. Through this analysis, our approach can contribute to understanding the synergies and trade-offs between SDG 1 (eradicating extreme poverty), SDG 7 (affordable clean energy), SDG 12 (responsible consumption and production) and SDG 15 (life on land).

### 5. Contribution to the aims and success indicators of ENLENS

*(A) How will your project evolve after the proposal research/activity. What is the long-term goal?*

Our case studies will lay the groundwork for larger studies on the impact of climate finance and energy mineral extraction in Global South countries. They will complement PI Carlitz’s ERC

Starting Grant and extend PI Westermann-Behaylo's recently concluded NWO project. We aim to shed light on the pathways of climate finance and energy mineral supply chains, including the distribution of funds, the policies, and the impact these funds have on the implementation of clean energy technologies. We provide quantitative and qualitative data to contribute to monitoring and impact evaluation. The case studies will also serve to generate hypotheses that can be tested through quantitative and qualitative means.

*(B) Why and how does your project contribute to the UvA-community of interdisciplinary research and ENLENS more specifically?*

Our research exemplifies the connection between mainly SDG1, SDG7 and SDG12, addressing the interdisciplinary issues of UvA and ENLENS. The discussion about climate finance and critical minerals can also bring new insight to the UvA community, encouraging consideration of alternative approaches. In addition, PI Carlitz is responsible for the Climate Justice Reading Group, and the dissemination of this research will happen through these group meetings.

*(C) ENLENS aims at broadening the community beyond the group of project PI's.*

Through this research, we aim to establish a comprehensive quantitative database, participate in conferences, and produce publications that contribute to achieving the objectives of this study. In addition, participation in the Future of Energy Seminar will provide a platform to disseminate our work and engage in fruitful discussions with experts in the field. We will leverage contacts at the University of Pretoria and the Pole Institute, Democratic Republic of Congo, to organize exchange visits and parallel dissemination events. We will also convene hybrid seminars that complement existing courses taught by the PIs and African collaborators, to involve students pursuing degrees in related fields.

## 6. Budget

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| <b>Faculty of Social and Behavioural Sciences</b>  |                 |
| Travel expenses for collaboration/workshopping:<br>a. Airfare: €3,000<br>b. Accommodation: €3,000<br>c. Local transportation and per diems: €2000<br>Exchange visit (Carlitz to Pretoria; Dr. Makhura to Amsterdam)  | € 8000          |
| Hybrid Seminar (Material, Food)  | € 1000          |
| Research assistance  | €6000           |
| <b>Faculty of Economics and Business</b>   |                 |
| <i>(2) Travel expenses for field visit, data gathering (PI + PhD student):</i><br>a. Airfare: €4,000<br>b. Accommodation: €3,000<br>c. Local transportation and per diems: €2000<br>(Westermann-Behaylo & Bwana to Great Lakes Region mineral production site) | € 9000          |
| Research assistance  | € 3000          |
| Attend two conferences   | € 3000          |
| <b>Total budget:</b>   | <b>€ 30.000</b> |

## References

- [1] Hafner M, Tagliapietra S. The Geopolitics of the Global Energy Transition. vol. 73. 2020.
- [2] Sovacool BK. The political economy of energy poverty: A review of key challenges. *Energy Sustain Dev* 2012;16:272–82. <https://doi.org/10.1016/j.esd.2012.05.006>.
- [3] Gupta J, Liverman D, Prodani K, Aldunce P, Bai X, Broadgate W, et al. Earth system justice needed to identify and live within Earth system boundaries. *Nat Sustain* 2023;6:630–8. <https://doi.org/10.1038/s41893-023-01064-1>.
- [4] IEA IEA. Critical Minerals Market Review 2023. 2023.
- [5] González-Eguino M. Energy poverty: An overview. *Renew Sustain Energy Rev* 2015;47:377–85. <https://doi.org/10.1016/j.rser.2015.03.013>.
- [6] Rao ND, Riahi K, Grubler A. Climate impacts of poverty eradication. *Nat Publ Gr* 2014;4:749–51. <https://doi.org/10.1038/nclimate2340>.