

Internship Terms of Reference

Internship Title:	Resource Nexus Analysis for Satellite-Based Assessment of Construction and Demolition Waste
Reference Number	
Institute/Office:	United Nations University – Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES)
Duty Station:	Dresden, Germany
Supervisor Name:	Dr. Azin Zarei
Supervisor Email:	zareai@unu.edu
Duration:	01/07/2026 to 31/12/2026
<p>Background</p> <p>The United Nations University (UNU) is a global think tank and postgraduate teaching organization within the United Nations System. UNU engages in policy-relevant research, capacity development, and knowledge dissemination in furtherance of the purposes and principles of the United Nations. The work of UNU contributes to solving pressing global problems that are the concern of the United Nations and its Member States.</p> <p>For the past five decades, UNU has been a source of impartial research on sustainability, human security, and economic development. With hundreds of researchers working at institutes in 12 countries, UNU's expertise spans the full breadth of the 17 Sustainable Development Goals, generating policy-relevant knowledge to effect positive global change. UNU collaborates closely with other UN entities and leading research institutions across the globe. For more information, please visit http://unu.edu</p> <p>United Nations University for Integrated Management of Material Fluxes and of Resources (UNU-FLORES)</p> <p>UNU-FLORES is one of 13 institutes, located in 12 different countries, which together comprise the United Nations University (UNU) — a global think tank and postgraduate teaching organisation, headquartered in Tokyo. UNU-FLORES develops strategies to resolve pressing issues in the sustainable use and integrated management of environmental resources such as water, soil, waste, energy, and other geo-resources that are of concern to the United Nations and its Member States – particularly in developing and emerging economies. Based in Dresden and Weißwasser, Germany, the Institute engages in research and innovation development, education and capacity development as well as outreach, advocacy and impact to advance the Resource Nexus. For more information, please visit https://flores.unu.edu/</p> <p>Project background information</p> <p>The building and construction sector is one of the largest consumers of natural resources and a major source of Construction and Demolition Waste (CDW). Improving circular use of materials requires better spatial understanding of where demolition occurs, how much material is generated, and how these flows interact with land use, energy demand, and urban vulnerability.</p>	

This research project develops a spatial and data-driven framework to assess demolition activity and material flows in Dresden using open-access satellite imagery and GIS analysis. The project adopts a resource nexus perspective, examining the interactions between materials, land use, transport-related energy demand, and environmental exposure in the built environment.

Description of Responsibilities

The intern will primarily support a systematic literature review on:

- The use of satellite imagery in urban sustainability and demolition detection
- Methods for estimating Construction and Demolition Waste
- Circularity indicators for recycled and reused building materials
- Integration of resource nexus concepts into spatial sustainability assessment
- Contribute to drafting sections of reports or scientific manuscripts related to literature review and methodology.
- Assist in organizing and preparing open-access datasets (satellite data summaries, building footprint data, demographic layers).

The intern may also assist in organizing datasets, structuring indicators, and supporting preliminary GIS-based visualizations. The internship will contribute to developing a strong methodological and conceptual foundation for circularity assessment and spatial Life Cycle Sustainability Assessment (LCSA).

Learning Objectives

- Gain experience in conducting a structured and systematic literature review in the fields of urban sustainability, circular economy, and remote sensing.
- Understand the Resource Nexus approach, and understand how satellite imagery can be applied to detect urban change and support sustainability assessment; how circularity indicators and resource nexus concepts can be integrated into Life Cycle Sustainability Assessment (LCSA).
- Improve academic writing and reporting skills through contribution to research documentation and potential publication materials.

Competencies

Values:

- **Inclusion** - Take action to create an environment of dignity and respect for all, regardless of age, culture, disability, ethnicity, gender, gender identity, gender expression, geography, grade, language, nationality, racial identity, religion, sex, sex characteristics, sexual orientation, social origin or any other aspect of identity.
- **Integrity** - Act ethically, demonstrating the standards of conduct of the United Nations and taking prompt action in case of witnessing unprofessional or unethical behaviour, or any other breach of UN standards.
- **Humility** - Demonstrate self-awareness and willingness to learn from others.
- **Humanity** - Act according to the purposes of the United Nations: peace, dignity and equality on a healthy planet.

Behaviours:

- **Connect and Collaborate** - Build positive relationships with others to advance the work of the United Nations and work coherently as One UN
- **Analyse and Plan** - Seek out and use data from a wide range of sources to understand problems, inform decision-making, propose evidence-based solutions and plan action

- **Deliver Results with Positive Impact** - Hold oneself and others accountable for delivering results and making a positive difference to the people and causes that the United Nations serves
- **Learn and Develop** - Pursue own learning and development and contribute to the learning and development of others
- **Adapt and Innovate** - Demonstrate flexibility, agility and the ability to think and act in novel ways

Qualifications

Education:

- University studies in one of the following disciplines: environmental science, physical geography, geoinformatics, remote sensing, civil or environmental engineering, urban planning, sustainability science, or other relevant subjects is required.
- Be in their final year of undergraduate study or enrolled in a graduate degree programme or is within the two-year post-graduation (maximum) from either a bachelors', masters' or PhD degree programme.

Language:

- Excellent communication skills (written and oral) in English are required;
- Working knowledge of another UN language is an advantage.

Application Procedure

Interested candidates should submit their application containing:

- Brief cover letter (in English) stating interest in and qualifications for the post;
- Current and complete CV in English;
- 2 recommendation letters;
- Document(s) confirming your education status (e.g. transcript and proof of enrollment);
- Any additional documents supporting application (publications, certificates, awards, etc.).

UNU accepts no responsibility for costs arising from accidents and/or illness or death incurred during the internship.

Additional Information

Interns are not staff members and may not represent UNU in any official capacity.

The purpose of the Internship Programme is not to lead to further employment with UNU but to complement an intern's studies. Therefore, there should be no expectation of employment at the end of an internship.

UNU is committed to diversity and inclusion within its workforce, and encourages all candidates, irrespective of gender, nationality, religious and ethnic backgrounds, including persons living with disabilities to apply and become part of the organisation.

UNU has a zero-tolerance policy on conduct that is incompatible with the aims and objectives of the United Nations and UNU, including sexual exploitation and abuse, sexual harassment, abuse of authority and discrimination.