



SweWIN

Swedish Wireless Innovation Network

Workshop on Sustainability

April 14, 2026

Supported by

VINNOVA



Avancerad Digitalisering



SweWIN

Swedish Wireless Innovation Network

Our partners:



Agenda

9.00: **Welcome address and presentation of SweWIN Sustainability Report**

9.20: **Keynote: Electricity use and GHG emissions from the ICT sector**, Nina Lövehagen, Ericsson

10.10: Coffee Break

10.40: **Introduction to SEE-6GIA (Sustainable and Energy Efficient 6G Integrated Antennas)**,
Oscar Quevedo-Teruel

10.45: **Additive Manufacturing for Sustainable Microwave Systems: Northern Waves Approach**,
Omar Ogreira

11.00: **Task-Centric Sustainable Federated Learning over the Edge-Cloud Continuum**,
Swapnil Shinde

11.15: **Unlocking the Energy-Saving Potential in O-RAN Cell-Free Massive MIMO by Joint Orchestration of Radio, Wireless Fronthaul, and Cloud Resources**,
Ozan Alp Topal

11.30: **Optimizing Wireless Links for Energy Efficiency through Sleep Modes**, Anders Enqvist

11.45: **Sustainable Semi-Decentralized Federated Learning with Stragglers**, Chengxi Li



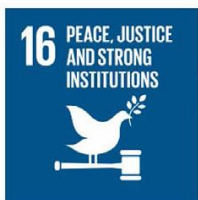
SweWIN

Swedish Wireless Innovation Network

“Realizing sustainable, resilient, and fair wireless communication and sensing in the digitalised era”



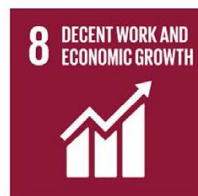
SUSTAINABLE DEVELOPMENT GOALS



SPIRITUAL



ECOLOGICAL



PEOPLE

Sustainability in SweWIN's Research Areas

	Sustainability (Environmental)	Resilience (Societal)	Fairness (Social and economic)
1. Radio electronics and antennas	✓		✓
2. Physical layer and network architecture	✓	✓	✓
3. Resource management and orchestration	✓	✓	✓
4. Resilience and security		✓	
5. Learning and optimisation	✓	✓	✓
6. Wireless functional safety		✓	

Our Sustainability Plan

- SweWIN attended workshops organized by AFRY in 2024 and 2025
 - Joint work with other competence centers
- Sustainability screening
 - Based on European Sustainability Reporting Standards (ESRS)
- Resulted in a Sustainability
 - Submitted to Vinnova in May 2025
 - Prepared by Ferdi Kara, Emil Björnson



Sustainability Plan 2025

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Prioritized Sustainability Topics

Priority 1: Energy

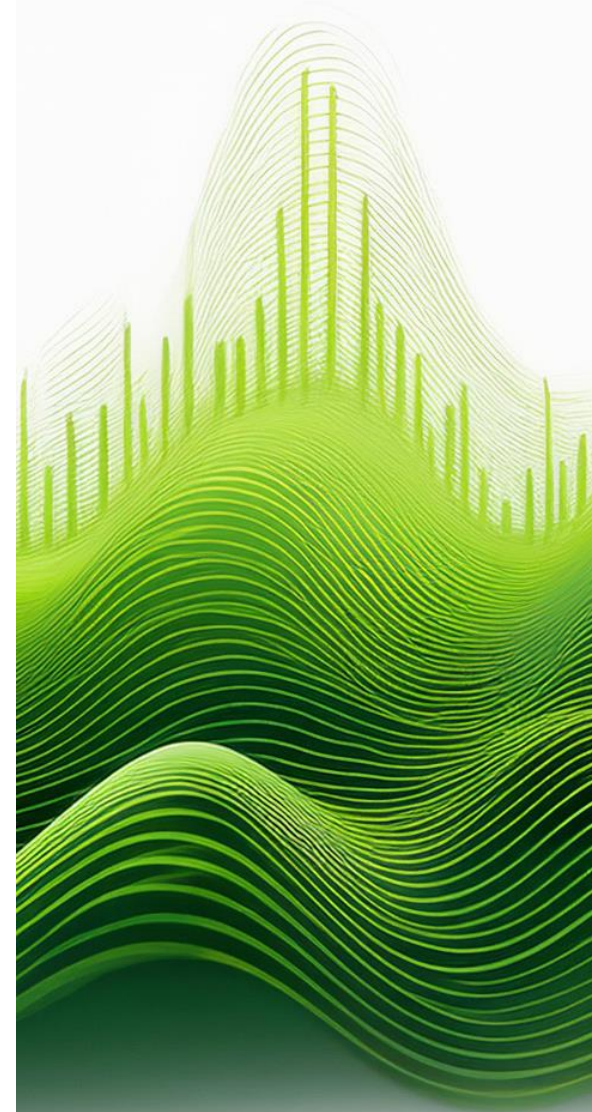
Developing energy- and resource-efficient wireless technology is a core mission. This involves hardware, infrastructure, operation, and services.

Priority 2: Climate change adaptation

Network resilience is essential for many reasons, including sustained operation under climate-change-related crises (e.g., storms, earthquakes).

Priority 3: Communities' economic, social and cultural rights

Developing technology that can provide global coverage is on our agenda to bridge the digital divide and give everyone access to digital services.



Proposed targets and actions



Improve energy efficiency/performance of wireless communication infrastructure (E1)

KPIs: Energy consumption per service (or bit) and efficiency of radio hardware components.

Actions: Energy optimization methods, enable use of low-power hardware and algorithms. Compare the energy performance of different network infrastructure components



Develop methodologies for resilient network technology to weather-related disruptions (E1)

KPIs: Number of evaluated resilience strategies, performance of new network components based on our new metrics.

Actions: Develop metrics for network survivability and resilience. Develop network components that support maintaining connectivity during heavy weather events.



Develop technologies that support bridging the digital divide (S3)

KPI: Number of evaluated technology components

Actions: Develop/compare cost-efficient connectivity solutions with a focus on rural areas

What Happens Next?

- **Promote further sustainability focus within SweWIN**
- **Expand the sustainability plan into a magazine paper**
 - Contact me if you want to help out!

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