

INVITATION TO BUILD A PAN-EUROPEAN RESEARCH AND INNOVATION NETWORK

Making the Performance of Building-Integrated Nature-Based Solutions Measurable and Computable (MECOBI-NBS)

From fragmented evidence to validated, simulation-ready parameters for buildings and urban climates.

GRÜNSTATTTGRAU is initiating a [COST Action](#) proposal and invites European partners to co-develop a rigorous network for sharing and translating the performance of green roofs, green façades and related Nature-based Solutions into simulation-ready knowledge and reliable evidence.

MAIN CHALLENGE AND STATE OF THE ART

The scientific challenge is no longer to demonstrate that building greening can provide benefits, but to quantify when, where and how reliably these benefits occur. Existing monitoring methods and simulation approaches represent selected vegetation processes, yet input parameters, metadata, indicators, boundary conditions and validation practices remain fragmented. Seasonal development, multi-year plant dynamics, maintenance and water availability are rarely described consistently. Structurally relevant changes in biomass, geometry and loads are often disconnected from building-physics assessments. Integrating Nature-based Solutions (NBS) into building physics is essential for accurately assessing their effects on thermal performance, moisture management, stormwater retention and indoor comfort. Their inclusion in the implementation of the EPBD is equally important to ensure that green roofs and façades are recognised as effective measures for climate resilience, energy efficiency and decarbonisation.

This limits comparability, uncertainty analysis and the routine use of realistic vegetation effects in design and regulation. The need is timely: European cities require defensible evidence for heat adaptation, energy performance, resilient construction and efficient investment in Nature-based Solutions.

OBJECTIVES FOR A FOUR-YEAR ACTION

- **Harmonise:** terminology, minimum metadata and protocols for evapotranspiration/cooling, shading/radiation, thermal-hygrothermal behaviour and structurally relevant characteristics.
- **Connect:** existing and otherwise funded experiments across climates, seasons and system types to enable comparable multi-year data generation without duplicating research funding.
- **Structure:** plant and system descriptors - including phenology, canopy geometry, physiological traits, substrate and water status, management, ageing, biomass and load-relevant parameters - in a FAIR-oriented data model.
- **Benchmark:** building-energy and microclimate simulation workflows through reference cases, uncertainty-aware calibration/validation guidance and transparent mappings from measurements to model inputs.
- **Translate:** the evidence into parameter libraries, training, design guidance and a roadmap for software integration, standards and future collaborative research.

WHY COST NETWORKING - AND WHY WE ARE LOOKING FOR YOU

No single laboratory, climate region or discipline can provide the required parameter space. A pan-European COST network is the appropriate mechanism to align nationally and otherwise funded research, compare diverse climatic and technical contexts, share infrastructures and expertise, train emerging researchers and build consensus for standards. COST funds coordination and capacity building rather than the underlying research. We therefore seek committed contributors in plant ecophysiology and horticulture; vegetation engineering, metrology and sensing; building physics, heat-moisture transfer and structural engineering; urban climate and CFD; statistics, uncertainty and FAIR data; BIM, digital twins and simulation software; green-roof/façade systems, landscape architecture, industry and standardisation. Diverse climatic regions, COST Inclusiveness Target Countries, Young Researchers and Innovators are essential to the network's critical mass.

IMPACT, STAKEHOLDER INVOLVEMENT AND VALORISATION

Researchers and software developers will consolidate, compare and structure existing measurement data and findings on green roofs and façades from nationally and otherwise funded research projects. They will translate this evidence into harmonised parameters, data structures, validated calculation methods and benchmarks that can be applied in building physics, building-energy as well as microclimate simulations, software development and standardisation.

Manufacturers, designers and engineers will test the usability and practical relevance of these outputs, while cities, building owners and certification bodies will define their decision-making and implementation needs. Policymakers and standardisation organisations will support the uptake of the results in regulations, procurement processes, standards and climate-adaptation strategies.

Stakeholder engagement will be organised through Working Groups, Short-Term Scientific Missions, Training Schools, benchmark exercises and targeted dialogues with practitioners and policymakers. In the short term, the Action will establish a common technical language and a connected interdisciplinary community. In the medium term, shared datasets, reference cases and validation procedures will improve reproducibility, modelling quality and professional skills. In the long term, trusted parameters and guidance will inform software defaults, engineering and design practice, procurement criteria, standards and climate-adaptation policies.

Results will be disseminated through an open knowledge hub, scientific method and data papers, software-oriented documentation, practitioner briefs, webinars, demonstrations and contributions to standardisation. Open access will be ensured wherever possible, supported by clear governance arrangements for data quality, licensing and intellectual property rights.

The Action will provide harmonised measurement methods, validated performance parameters and standardised modelling inputs for green roofs and façades, enabling their thermal, hygrothermal and cooling performance to be consistently measured, compared and simulated across European climates, system types and software environments.

JOIN THE PROPOSER NETWORK

We welcome universities, research organisations, public authorities, SMEs, industry, professional bodies, NGOs and other relevant stakeholders. Please send your country, affiliation, expertise, career stage and intended contribution to elisabeth.leitner@gruenstattgrau.at as early as possible.

OC-2026-1 requires at least 7 COST Full/Cooperating Members, at least 50% Inclusiveness Target Countries and at least 40% Young Researchers and Innovators (under 40). Submission closes 28 October 2026, 12:00 CET. An updated [e-COST profile](#) is required. [Open Call information](#) | [Rules and guidelines](#) | [About GRÜNSTATTGRAU](#)