



1st Call for Short-Term Scientific Missions (STSMs)

12 May 2022

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NEXUSNET & STSMs

This is the 1st Call for applications for Short-Term Scientific Missions (STSMs) funded by the COST Action CA20138 [“Network on water-energy-food nexus for a low-carbon economy in Europe and beyond – NEXUSNET”](#).

STSMs allow scientists to conduct short research and study visits to a research institution or laboratory in another [COST Country](#) to strengthen the existing networks and to foster collaboration, learn a new technique or use equipment, data and/or methods not available in their own institution and contribute to the scientific objectives of the Action.

NEXUSNET is organized into 6 Working Groups (WPs). STSMs are considered as a great opportunity for participants to focus their work on research topics that have been highlighted by WGs or introduce new ideas addressing the NEXUSNET objectives.

Details on the content and goals of WGs is available in the [Action's Memorandum of Understanding \(MoU\)](#).

NEXUSNET aims to empower collaborations between EU and international researchers and stakeholders, synthesize the existing empirical Nexus research and produce an intellectual toolkit, demonstrating a clear link to improved resource management and governance outcomes that underlie the value of Nexus.

Guidelines for applicants

STSMs benefit to:

- **STSM grantees**, who receive funding for implementing a project with an international team and gain knowledge or access to equipment or techniques not available in the home institution.
- **STSM hosts**, who receive an international partner in their institution and can develop long lasting collaboration.

In the framework of this 1st Call, NEXUSNET offers 4 STSM positions, supporting financially travel grants to individuals. Grantees need to make their own arrangements for traveling, accommodation, etc.

The minimum visit should last for 5 days (including traveling), without any limit to the maximum duration, however, STSMs have to be accomplished within the 1st Grant Period of the Action, i.e. end of October 2022.

Applications should be submitted until **25 May 2022**. Decisions will be announced by **01 June 2022**.

The maximum amount of STSM grants for this period is awarded to **2,500€**. Details about the maximum daily allowance that can be claimed for accommodation and meal expenses per country can be found in [COST Daily Allowance Rates](#). Applicants are also requested to consult the [Annotated Rules for COST Actions](#).

Who is eligible to apply for an STSM?

STSM travel grants are available for researchers and innovators affiliated to a legal entity in COST Full/Cooperative Member, Near Neighbor Country or European RTD. Young researchers and innovators (<40 years old) are strongly encouraged to participate.

Application instructions

Applications for STSMs are managed through the e-COST management tool. All applicants must have an [e-COST profile](#).



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The applicant must use the e-COST management tool to register the STSM application request. In addition to the information entered at the website, the applicants should also upload the following documents in a single PDF file:

- Short cv with recent publications.
- [STSM proposal](#).
- Requested budget in €.
- Confirmation letter from the Host Institution unless they select one of the NEXUSNET STSMs opportunities for this period.

For additional information on the submission via the e-COST system, applicants may visit the [Grant Awarding User Guide](#).

Once the STSM has ended, the grantee must submit a [short report on the outcomes of the visit](#). The report needs to be submitted within 30 days after the end date of the STSM or 15 days after the end of the Grant Period (whichever date comes first). It is noted that if the applicant does not submit the required report on time, the grant is cancelled. The grant payment is expected to be deposited within 30 days after the approval of the report.

Evaluation of applications

Each proposal will be assessed independently by the STSM committee of the Action, and an evaluation score will be given considering (i) the clarity of the proposal, (ii) the degree to which the proposed STSM complements or contributes to the Action strategic priorities and objectives as defined in the MoU, (iii) planned work plan feasibility and outputs, and (iv) the ability of the STSM applicant to successfully complete the proposed STSM and disseminate relevant outputs. The proposal should show clear evidence of how the proposed STSM will benefit the applicant and the Action. The proposal will be assigned to one of the following categories:

- - **Very poor**: proposal unsound and incomprehensive. Not clearly linked to any of the WGs (0-10 points).
- - **Poor**: proposal with limited understanding, planning and unclear objectives. Weakly linked to at least one WG (11-35 points).

- - **Fair**: proposal with some understanding, planning and objectives. Moderate linked to at least one WG (36-60 points).
- - **Good**: good proposal but needs input to develop feasible STSM. Well linked to at least one WG (61-80 points).
- - **Excellent**: proposal well designed in terms of planning, feasibility and expected outcomes. Strongly related to at least one WG (80-100 points).

A proposal can reach a maximum score of 100. The proposals will be ranked and those 4 with the highest scores will be granted.

STSMs opportunities

STSM Topic 1: Co-producing the NEXUS definition

Description: The STSM is linked with MoU – WG2 with the aim to develop a meaningful Nexus case repository. The WEF Nexus has had wide-spread academic and political attention in the past 10 years. With this new paradigm natural resource flows and related policies shall be considered under an integrated rationale so that a triple security in water, energy and food provisioning can be created. During the last years, scholars have come up with a variety of definitions while, they have also expanded the sectors and resources of the Nexus, for instance to ecosystems, land or waste. Research into tools, models, assessments, and methods has also been widespread. This has led to a fuzzy understanding of the nexus and a lack of clarity in what it intends to achieve as well as how. The suggested work would undertake a survey with experts from the COST action NEXUSNET that gathers scholars on Nexus research in Europe and beyond. The aim of the survey is to come up with a definition of the Nexus that the community agrees upon and a set of approaches that are deemed as essential to achieve Nexus aims. Surveys are social science tools and can support consensus building and are therefore ideal for this kind of challenge. A high-impact factor peer-reviewed journal article is expected from this work.

Host Institution & contact person: University of Oulu, Oulu (FI) - Tamara Avellan, email: tamara.avellan@oulu.fi



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STSM Topic 2: Monitoring and modeling of NEXUS

Description: The STSM is linked with MoU - WG1, aiming at the assessment of monitoring and modelling NEXUS techniques in order to suggest improvements and state-of-the-art approaches. The applicants will have the opportunity to contribute to the work of the WHEELab Group (UNIVPM), which has rich expertise in numerous Horizon2020 and many other EU-funded projects, including the recently accepted PRIMA-Sure Nexus project. The tasks developed by WHEELab mainly involve the implementation of sustainable solutions for water and waste treatment at lab, at a pilot or larger scale. The Group has consolidated new fields of expertise, such as Water-Energy-Food-Environment NEXUS, Life Cycle Assessment, Life Cycle Costing and Cost-benefit analyses, Decision Support Systems, and digital water solutions, supported using software such as PYTHON, MATLAB, LABVIEW, R Studio, UMBERTO and WEST. The activities of this STSM can be related to the following activities of the WHEELab Group:

- Demonstrating green-gray infrastructures, nature-based solutions and other technologies for the management of a variety of water streams to produce valuable resources, increase agricultural production and boost the economic activities of Mediterranean areas.
- Creating new linkages between the digital and the physical world by developing, assessing and bringing to the market data and digital technologies for integrated water management.
- Fostering innovative solutions for sustainable tourism development and management of tourism enterprises.
- Advancing efficient and circular water use in process industries by adopting integrated and holistic approach to boost water-energy efficiency and materials circularity.
- Generating scientific and practical evidence on the transition in developing the NEXUS approach through the optimization of water allocation across different sectors and its combination with energy and food security to support regional and local development, systemic change and resilient transition.

Host Institution & contact person: Marche Polytechnic University (UNIVPM), Ancona (IT) - Francesco Fatone, email: f.fatone@univpm.it

STSM Topic 3: Mapping NEXUS implementers

Description: This STSM is linked with MoU – WG6 with the aim to support and encourage young researchers to contribute to the objectives of NEXUSNET – Working Package 6 on Stakeholder Coordination. The STSM will assist understanding organizational needs and culture of the NEXUSNET and co-develop emerging findings. The objective of WG6 is to engage stakeholders, define their priorities and needs, and enhance the successful implementation of NEXUS research in policies and sustainable development strategies within diverse international, national, and regional settings. The STSM will support the stakeholder engagement strategy of WG6 aiming to bring together diverse groups and individuals, operating in the non-academic field, and support/encourage dialogue on implementing and scaling nexus innovations. The STSM will also provide an understanding on how stakeholders are organized and organize NEXUS implementation in their organizations. Such an understanding could support the development of a “nexus ecosystem of actors”. Please note that the term “stakeholder” in this STSM application refers to implementers (and future potential implementers) of the nexus approach. The STSM will contribute to identifying the stakes of the NEXUSNET Working Groups and diverse stakeholders in a comparative way and open a space for trans-disciplinary dialogue, research, and Nexus-coherent policy-driven outcomes. One of the innovative elements of this STSM is its contribution to the implementation driven decision factor of the Nexus: stakeholders’ engagement and stakeholders’ organization for the NEXUS. WG6 aims to create a common language among different Working Groups and stakeholders by understanding their interests, perspectives and needs in order a shared vision to be developed. The STSM will support the WG to establish common goals and achieve long term efficiencies, through the following actions/steps:

- Identification of criteria and relevant information (i.e., influence, expertise, driving forces, organizational structures, interests) supporting the development of long and short-term strategic plans.
- Definition of stakeholders’ groups and their stakes towards Nexus Implementation.
- Creation of a stakeholder map and definition of their roles in relation to the Working Groups of the



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NEXUSNET. The mapping will help to identify strong links and missing points towards successful Nexus implementation.

- Analysis of the stakeholder (implementers) map and collection of information (e.g. opportunities and barriers) in order to understand organizational and management challenges and co-develop pathways for defining innovative strategies that stimulate engagement for Nexus implementation.
- Analysis of internal organization and organization levels of stakeholders/processes as well as their engagement with other organizations for the implementation of the Nexus.
- Engagement with other WGs (Stakeholder Engagement Coordinator/WG6) and definition of stakeholders' groups need to be mobilized to achieve their tasks.
- Identification of implementers/ stakeholders who play a critical role in the implementation of the Nexus from a management and governance perspective.

The STSM in WG6 will support the NEXUSNET to co-create paths for policy uptake and will define organizational structure of stakeholders in the field of NEXUS. Desk analysis, survey and semi-structured interviews will be required and a standardized guideline for such an approach will be co-developed.

Host Institution & contact person: United Nations University, Dresden (DE) - Serena Caucci, email: caucci@unu.edu

STSM Topic 4: Analyzing the interdependencies of NEXUS components

Description: The STSM is linked with MoU: WG1 - Monitoring and modelling the NEXUS. NEXUS components are not isolated but highly interconnected and mutually interdependent. Interdependencies of NEXUS components can improve the efficiency of NEXUS techniques, but they can also increase system vulnerability. Due to the limited understanding of NEXUS components' vulnerabilities and incomplete methodologies that allow estimating/quantifying the effects of climate change-related events on NEXUS components, this is paramount under investigation. In this STSM, based on the emerging findings on knowledge, best practice, and analysis of the research gap identified from the literature review and stakeholder engagement, a road map of key actions

will be developed to identify and quantify the potential risks climate change poses on the NEXUS components. One of the main risks facing Critical Infrastructures (CIs) is climate change, with extreme climatic events becoming more acute, such as increased storm surge levels. Therefore, existing CIs that were initially designed with a certain protection level against climate hazards face increased stress and, in turn, a higher risk of failure, as climate change further amplifies the effects of natural hazards. For this reason, responsible organizations need to understand the dependencies of CIs' possible cascading effects of a CI failure. The overall aim of this project is: to collect and categorize evidence/information of climate change inferences on critical infrastructures, to generate a repository of incidents, scenarios, associated costs, allowing the development of a conceptual smart model ready to be trained in semi-autonomous/autonomous manner, to identify and characterize tools based on intelligent systems. To observe the occurrence of natural hazards and climate induced extreme events and subsequent impacts of such events on CIs, key variables such as extreme storm surge level, mean sea level, river discharge, wind speed, wave height, temperature and rainfall data will be reviewed. These data will be used to assess the potential cascading effects of a failure of one CI to another CI down the line. It is also anticipated that using intelligent data analysis of the mathematical modelling of infrastructure dependencies will be performed to determine the interdependencies of critical infrastructures. A high Impact Factor (IF) journal paper is expected from this project.

Host Institution & contact person: University College Dublin (Ireland) - Md Salauddin, email: md.salauddin@ucd.ie

Questions/inquiries

Please contact:

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