

EN

Horizon Europe

Work Programme 2023-2024

12. Missions

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Introduction

EU Missions aim to address some of the greatest challenges facing our society. They are bold and inspirational with clear objectives that are time-bound, realistic, measurable and targeted.

Rooted in research and innovation, missions aim to tackle societal challenges with systemic solutions, leading to societal transformations and social impact.

Five mission areas have been included in the Horizon Europe Regulation (Adaptation to Climate Change, including Societal Transformation; Cancer; Healthy Ocean, Seas, Coastal and Inland Waters; Climate-Neutral and Smart Cities; Soil Health and Food). In 2021, Missions went through an initial preparatory phase, during which implementations plans were developed. These included detailed objectives, specific interventions, investment strategy and performance indicators for each mission. In summer 2021, the implementation plans have been assessed against objective criteria ¹ and all five proposed EU Missions have now entered their full implementation²:

- Adaptation to Climate Change: support at least 150 European regions, local authorities and communities to become climate resilient by 2030;
- Cancer: improving the lives of more than 3 million people by 2030 through prevention, cure and for those affected by cancer including their families, to live longer and better;
- 100 Climate-Neutral and Smart cities by 2030;
- Restore our Ocean and Waters by 2030;
- A Soil Deal for Europe: 100 living labs and lighthouses to lead the transition towards healthy soils by 2030.

Missions will continue to help deliver key EU policy priorities such as the European Green Deal, Europe's Beating Cancer Plan, NextGenerationEU, the EU Industrial Strategy and A Europe fit for the Digital Age, amongst others.

To achieve their goals and promote societal change, missions will implement the reuse and reproducibility of research results such as FAIR research data and open access to scientific publications. Also, the missions will closely involve citizens in their implementation and monitoring throughout their duration, also showcasing the added value of the EU.

The five EU Missions work programme parts for 2023 contain actions to support the full implementation of missions according to their implementation plans. The work programme will contain actions in synergy and coordination with other missions, parts of Horizon Europe, in particular with European Partnerships and Clusters, and including also bottom-up parts

¹ https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/missions-horizon-europe/assessment-criteria_en
² [COM\(2021\) 609 final](#)

such as the Marie Skłodowska-Curie Actions, the European Institute of Innovation and Technology or the European Research Council, as well as with other EU funding instruments and policies.

Furthermore, they will need to be implemented in close synergy with funding, programmes and strategies both at Member State / Associated Country and regional levels, as well as with civil society and the private sector.

Critical to the success of the missions will be the extent of wide engagement across the EU and Associated Countries and beyond, including citizens, in particular young people. To this end, Missions will contribute to the European Solidarity Corps scheme with the aim of engaging with the younger generation to deliver on the five EU Missions goals.

DRAFT

Mission: Adaptation to Climate Change

In February 2021, the European Commission adopted a **EU strategy on adaptation to climate change** that sets out how the EU can adapt to the unavoidable impacts of climate change and become climate resilient by 2050.

Pushing further on the belief that we must adjust now to tomorrow's climate, the EU has launched a specific mission to foster the resilience of all, be it regions, cities, local communities, to climate change. The **Mission Adaptation to Climate Change**, will enable Europe to prepare for unavoidable climate impacts and accelerate the transformation to a climate-resilient Europe. Its implementation plan specifies the goal and objectives as well as implementation details of the mission “**Adaptation to Climate Change**”³.

Rooted in research and innovation, the Mission has set out concrete objectives and deliver tangible solutions, mainstreaming nature-based approaches, to Europeans. The work supported by the Mission will also be of particular relevance to the forthcoming Nature Restoration Law, that will set targets to restore degraded ecosystems.

A regional approach

The Mission wants to mobilise all actors, such as EU Member States, regional and local authorities, research institutes, investors and citizens to create real and lasting **impact**.

By supporting European regions, local authorities and communities to become **climate resilient**, the Mission will help them to be prepared for inevitable changes and extreme events.

While some regions, and cities in Europe are well prepared to climate change, others are striving for solutions to address their vulnerabilities. Less developed regions and local authorities that are more vulnerable to climate impacts and have low adaptive capacity will receive particular attention. The Mission approach is to ask front-runners European regions to share their experience and lessons learnt with others and accompany them in finding and possibly reapplying solutions adapted to their climatic situation and economy.

The R&I support will be provided in different ways:

1. Provide general support to European regions, local authorities and communities to better understand, prepare for and manage climate risks and opportunities
2. Accelerate transformations to climate resilience: cooperate with at least 150 regions, local authorities and communities to accelerate their transformation to a climate resilient future, supporting them in the co-creation of innovation pathways and the testing of solutions

3

https://ec.europa.eu/info/sites/default/files/research_and_innovation/funding/documents/climate_mission_implementation_plan_final_for_publication.pdf

3. Demonstrate systemic transformations to climate resilience: deliver at least 75 large-scale demonstrations of systemic transformations to climate resilience across European regions, local authorities and communities.

For 2023, the Mission will focus on supporting regions, local authorities and communities in demonstrating at real scale and in real life climate resilience solutions capable to address one or more of the systems locally identified as key for climate resilience building and as the most vulnerable to effects of climate change. Indeed, the Mission will support the innovation still needed to implement the solutions at scale, in the specific environment where the demonstration will take place, and to transform the key systems into a more climate resilient systems, with Nature-Based Solutions to be explored as priority. The demonstration projects would be ideally part of the adaptation roadmaps locally developed to address the identified climate risks, and in line with the National Adaptation Plan and regional adaptation pathway/strategy, where available. In the spirit of the Mission, those projects should also be co-designed, co-developed and co-implemented with the engagement and support of the local stakeholders, being them the citizens, the businesses and /or the social partners.

Engagement and commitment by the Regions and the local authorities directly in the demonstration activities will assure to maintain the solutions in place for the future, beyond the implementation duration of the project. This will contribute to the aim to deliver at least 75 large-scale demonstrations of systemic transformations to climate resilience across European regions, local authorities and communities by 2030, scaling up and fostering large-scale deployment of tested innovative solutions for climate resilience, the enabling of their diffusion and the removal of barriers for their uptake. As foreseen under the Horizon Europe Regulation, the Mission will follow a portfolio approach in its related calls, in that “the evaluation committee shall rank the proposals that have passed the applicable thresholds, according to: (a) the evaluation scores; (b) their contribution to the achievement of specific policy objectives, including the constitution of a consistent portfolio of projects. In particular, the Mission calls will foster the development of a balanced portfolio of solutions across the different climate risks, the different innovation areas as identified in the Mission Implementation Plan and the different biogeographical regions, as defined by the EEA.

The following call(s) in this work programme contribute to this Mission:

Call	Budgets (EUR million)	Deadline(s)
	2023	
HORIZON-MISS-2023-CLIMA-01	82.81	20 Sep 2023
Overall indicative budget	82.81	

Call - Demonstration of climate resilience solutions in support of the implementation of the Adaptation to Climate Change Mission

HORIZON-MISS-2023-CLIMA-01

Conditions for the Call

Indicative budget(s)⁴

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) ⁵	Indicative number of projects expected to be funded
		2023		
Opening: 10 Jan 2023 Deadline(s): 20 Sep 2023				
HORIZON-MISS-2023-CLIMA-01-01	IA	30.00 ⁶	8.00 to 10.00	3
HORIZON-MISS-2023-CLIMA-01-02	IA	34.81 ⁷	8.00 to 11.00	3
HORIZON-MISS-2023-CLIMA-01-03	IA	18.00 ⁸	4.50 to 6.00	3

⁴ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

The Director-General responsible may delay the deadline(s) by up to two months.

All deadlines are at 17.00.00 Brussels local time.

The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

⁵ Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

⁶ Of which EUR 3.21 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.69 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 5.58 million from the 'Digital, Industry and Space' budget and EUR 0.66 million from the 'Civil Security for Society' budget and EUR 19.86 million from the 'Climate, Energy and Mobility' budget.

⁷ Of which EUR 3.73 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.79 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 6.48 million from the 'Digital, Industry and Space' budget and EUR 0.76 million from the 'Civil Security for Society' budget and EUR 23.04 million from the 'Climate, Energy and Mobility' budget.

⁸ Of which EUR 1.93 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.41 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 3.35 million from the 'Digital, Industry and Space' budget and EUR 0.39 million from the 'Civil Security for Society' budget and EUR 11.92 million from the 'Climate, Energy and Mobility' budget.

Horizon Europe - Work Programme 2023-2024
Missions

Overall indicative budget		82.81	
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General conditions relating to this call

<i>Admissibility conditions</i>	The conditions are described in General Annex A.
<i>Eligibility conditions</i>	The conditions are described in General Annex B.
<i>Financial and operational capacity and exclusion</i>	The criteria are described in General Annex C.
<i>Award criteria</i>	The criteria are described in General Annex D.
<i>Documents</i>	The documents are described in General Annex E.
<i>Procedure</i>	The procedure is described in General Annex F.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G.

In 2023, the Mission will support the development and testing of solutions addressing one or more of the systems identified in the Mission Implementation Plan as key for climate resilience building. It will foster the development of a balanced portfolio of solutions across the different climate risks and the different biogeographical regions, as defined by the European Environment Agency.

Proposals for topics under this Mission should set out a credible pathway to adapting to Climate Change in Europe, and more specifically to all of the following impacts:

- Accelerate the transformation to a climate resilient future in a number of regions
- Deploy at full scale the systemic transformations locally needed to build climate resilience, mainstreaming nature-based solutions in the approach.

In the spirit of the Mission Implementation Plan, all proposals should also adopt a participatory approach that takes full consideration of the local dimension of climate change and climate adaptation strategies, and entails collaboration and engagement with the local communities that are affected, in the first place, by climate challenges. Engagement of citizens should be, therefore, foreseen in the design and/or implementation of the solutions, strategies and developments.

Proposals are invited against the following topic(s):

HORIZON-MISS-2023-CLIMA-01-01: Testing and demonstrating transformative solutions increasing climate resilience of the agriculture and/or forestry sector.

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 8.00 and 10.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 30.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The conditions are described in General Annex B. In addition to the standard eligibility conditions, proposals must include demonstration activities to be carried out in 4 different regions/local authorities/ communities located in 3 different Member States /Associated Countries, involving and including in the consortium partners from these three countries.
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 6 to 8 by the end of the project – see General Annex B
<i>Evaluation and award procedure</i>	Proposals that attain thresholds for each evaluation criteria will be ranked based on overall score. Following the overall ranking, the highest ranked proposals for each biogeographical area⁹ will be selected first, and until budget allows. Should budget be sufficient, eventually the second ranked proposals for each biogeographical area will be selected following the overall ranking and so forth, until budget is available. The biogeographical area focus of each proposal should be specified in the free keywords section of the proposal.

Expected Outcome: Projects results are expected to contribute to all of the following expected outcomes:

- Regions and communities have undertaken action transforming into tangible projects their roadmaps designed with the aim of fostering a systemic approach to climate

⁹ As defined by the Habitat Directive Council Directive 92/43/EEC of 21 May 1992 and the related Nature2000 legislation and as indicated by the EEA: [Biogeographical regions — European Environment Agency \(europa.eu\)](#): Alpine, Atlantic, Black Sea, Boreal, Continental, Macaronesian, Mediterranean, Pannonian, Steppic

resilience towards the different and multi-risks locally identified as relevant, with particular emphasis on the development of nature-based solutions, biodiversity and climate mitigation synergies, and ecosystem restoration across a range of agricultural and/or forestry ecosystems.

- Regions and communities have taken the leadership and have been involved in development and testing of solutions that can transform the agriculture and the forestry sector, making it more resilient to foreseen climate change, while making progress in the sustainable transformation required implementing the European Green Deal.
- Solutions contribute to the implementation at the local level of the Common Agriculture Policy and the related national Strategic Plans, are well in line with the foreseen measures for drought management and/or the river basin management plans where those are in place.
- Developed solutions are close to nature, are at least neutral or support biodiversity, improve or at least do not harm water quality and availability (retentiveness in the landscape), making both the sector and nature more resilient to climate change and supporting implementation of the EU Biodiversity Strategy for 2030.
- Solutions making the agriculture and/or forestry business more resilient to long term effects of climate change have been developed, tested and brought closer to the market.
- Potential economic, social and environmental losses caused by extreme weather events to the agriculture sector and other sectors, such as forestry, are reduced, making them more resilient through better preparation.
- Accompanying measures for enabling conditions, that would boost the outcomes, such as support instruments for environmental services, the use of digital monitoring, access to relevant data and knowledge, facilitation of financing and mobilisation of resources, are piloted.
- Agriculture and other related businesses in the sector, in particular those affecting to the food-water nexus, are better prepared to cope with the changing climate, also through climate adaptation targeted education, up- and re-skilling programmes.
- Climate-resilient solutions dedicated to small farms, organic farms or farms in conversion or any type of farms looking for alternative to intensive agriculture are enabled, contributing to the implementation of the Farm to Fork Strategy.

Scope: This topic relates to the Mission's objectives to mobilise at least 150 regions in testing the solutions most locally needed to build climate resilience and to deliver at least 75 deep demonstrations of systemic transformations to climate resilience.

The proposal should **develop and test innovative solutions**, combining technological, social and business innovation, leading to an increase of the resilience and adaptation capacity to climate change in the involved regions and communities of the agriculture sector and the

related value chains. Nature based solutions¹⁰ and the restoration of cropland and grassland should be explored as priority and at the very heart of the development whenever possible.

The proposed solution should address at least some of the following aspects:

- Improving resilience of the **agriculture and /or forestry sector**, improving the capacity of the sector to withstand dry periods and extreme droughts while protecting the ecological flows, preserving biodiversity in and around the catchment channels, preserving longitudinal connectivity of the flowing streams, slowing the falling level of the groundwater table and reversing the loss of biodiversity. This should include for example exploring value of culture rotation and other means to improve soil quality, improving soil structure by circular approaches, establishment and maintenance of landscape features (for example such as hedges reducing wind erosion), innovative silvo-pasture, management of genetic resources in an agro-ecological perspective and other agro-ecology approaches in farmland, in particular in relation to droughts and water multi-usage and management;
- Exploiting **agro-ecology** as an approach to enhance the climate resilience of the farming system, its functionality and sustainability, while bringing sustainable solutions and multiple benefits, such as enhanced yields from adapted food crops, water efficiency, enhanced farmer livelihoods from income generation, increased biodiversity, improved water quality and water use efficiency, the ecological status of waters, improved soil structure and health, reduced erosion, and/or a higher level of carbon sequestration.
- Exploring integration of available **smart farming** approaches (and improvements of the same based on updated data) and the use of technologies as the AI and the Internet of Things (IoT) to improve climate resilience through the modification and improvement of nutrient and crop protection processes, such as fertilization, pest control and irrigation, to ensure sufficient crop yields both in terms of quality and quantity, while also reducing emissions, water consumption and preserving biodiversity.
- Development of **more natural ecosystems**, generating combined benefits for climate mitigation, reduction of water flooding and soil erosion, (by increasing recurring to green infrastructures, tree planting, or increasing of permeable green surfaces) and maintaining or restoring rivers, peatland, wetland and natural floodplain.
- Further demonstrate and increase awareness of the **value of maintaining and restoring existing natural systems**, preservation of cultural landscapes and socio-ecological systems as proving rich spectrum of climate services compared to other anthropogenic solutions, including integration of cultural heritage considerations as the legacy from the

¹⁰ The EU Commission defines nature-based solutions as “Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions.” Nature-based solutions must therefore benefit biodiversity and support the delivery of a range of ecosystem services.

past, to be experienced in the present, and for transmitting to future generations. In line with the Mission Implementation Plan and the new EU Climate Adaptation Strategy, implementing nature-based solutions with adequate social and environmental standards on a larger scale would increase climate resilience. Blue-green (as opposed to grey) infrastructures represent multipurpose, “no regret” solutions, which simultaneously provide environmental, social and economic benefits and help build climate resilience, which uptake can be facilitated by better quantification and communication of their benefits. Nature based Solutions (NBS) essential role for sustaining healthy water, oceans and soils was recognised, together with their potential to reduce costs, provide climate-resilient services, and improve compliance with Water Framework Directive requirement for good ecological status, if they were to play a bigger role in land-use management and infrastructure planning. The forthcoming Nature Restoration Law will also play an important role in requiring MS to plan restoration activities across a range of ecosystems.

As climate impacts, adaptive capacities and disaster risk reduction capabilities differ greatly across regions, the proposed development and innovation should address specific needs identified **at regional and local scale** (both at the rural, urban-rural interface and eventually in urban context) with tailor-made responses and measures, fully acknowledging place-based governance, socio-economic and identity characteristics and other place-based data.

In line with the Mission objective to **build systemic climate resilience**, the proposal should address the **multi-risks locally identified**, design and implement a systemic solution to reduce the identified vulnerabilities of the agriculture and/or forestry sector to climate change and to mitigate its negative potential impacts.

Under the Mission approach, collaborations to develop and test effective solutions between regions/local authorities/communities facing similar challenges are highly encouraged. To this purpose, the proposals **must include at least 4 demonstrations taking place in regions/local authorities/ communities**, which should collaborate in addressing the common climate change challenges identified and in testing the most suitable solutions. These at least 4 demonstrations must be **located in at least 3 different EU Member States and/ or Horizon Europe associated countries**. Involvement in the proposal of regions eligible for Cohesion funds¹¹ to conduct at least one of the proposed demonstrations shall be regarded as a positive element.

The proposals should clearly identify the biogeographical area, for which the proposed solution is relevant and to which the proposal is focussed. Moreover, the proposal should explore possible **reapplication to other regions**, starting from those located in the same biogeographical areas.

To support a large impact, the proposed solutions should be widely re-applicable. To this purpose, identification and inclusion of **at least three “replicating” regions/local**

¹¹ Territories eligible for Cohesion funds are defined under the Cohesion policy: https://ec.europa.eu/regional_policy/sources/graph/poster2021/eu27.pdf?

authorities/communities, interested in reapplying the lessons learnt (totally, partially or with the required adjustments) in their territories is strongly encouraged; this could take the form of inclusion in the consortium of one or more partners providing support for the technical exchanges and the knowledge uptake in the “replicating” regions.

In addition to the local/regional authorities owning the climate challenge, the consortium may include other type of partners, such as private or public research organisations, enterprises and NGOs, to ensure that all needed capabilities are available to develop and implement real life actions.

Proposals should build (when relevant) upon previous developed or existing knowledge and adaptation solutions, designed and developed from previous projects, including from beyond EU, addressing climate change adaptation and funded by European and National programmes, in particular the European Union Framework programmes for Research and Innovation (such as Horizon 2020 and Horizon Europe under their different pillars and clusters), as well as the LIFE programme. Moreover, proposals should look into opportunities to scale up the solutions demonstrated and to foster their broad deployment across in Europe through the LIFE programme, and its integrated projects in particular, and through the European Regional Development Fund programmes.

Proposals should include a mechanism and the resources to establish operational links with the Climate-ADAPT platform (run by the European Environment Agency (EEA) together with DG CLIMA) that will act as a central element for the monitoring, support and visualisation of the Mission progress in European Regions. To this purpose, projects will feed their results to the Climate-ADAPT and EEA assessments.

Projects funded under this topic are strongly encouraged to participate in the Mission Community of Practice that will be established amongst the Mission Charter signatories and and in **networking and joint activities** with other projects funded under other topics in the Mission Climate Adaptation as well as in other relevant Missions and partnerships, as appropriate. These networking and joint activities could, for example, involve the participation in joint workshops, the exchange of knowledge, the development and adoption of best practices, or joint communication activities. To this extent, proposals should provide for dedicated activities and earmark appropriate resources. Beyond the Mission, the projects funded under this topic are also encouraged to exchange and identify cooperation opportunities with other projects funded under Horizon Europe, in particular those funded under Cluster 6, the Mission A Soil Deal for Europe and the future partnership on agro-ecology living labs.

The European Commission intends to establish a network and coordination activities amongst all the projects funded for the implementation of the Climate adaptation Mission, under the Horizon 2020 European Green Deal call and under Horizon Europe, and that will be coordinated by the soon to be established Mission Implementation Platform. The projects under this topic will be requested to contribute to this effort. Applicants should acknowledge this request and already account for these obligations in their proposal, making adequate

provisions in terms of resources and budget to engage and collaborate with the Mission governance.

To ensure a **balanced portfolio** covering the different climate risks as identified in the Mission Implementation Plan and to maximize the footprint across all the different biogeographical areas¹², the best ranked proposals for each biogeographical area will be selected.

HORIZON-MISS-2023-CLIMA-01-02: Testing and demonstrating transformative solutions to protect critical infrastructure from climate change, mainstreaming nature based solutions.

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 8.00 and 11.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 34.81 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The conditions are described in General Annex B. In addition to the standard eligibility conditions, proposals must include demonstration activities to be carried out in 4 different regions/local authorities/ communities located in 3 different Member States /Associated Countries, involving and including in the consortium partners from these three countries. If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 6 to 8 by the end of the project – see General Annex B
<i>Legal and financial set-up of the Grant</i>	The rules are described in General Annex G. The following exceptions apply:

¹² As defined by the Habitat Directive Council Directive 92/43/EEC of 21 May 1992 and the related Nature2000 legislation and as indicated by the EEA: [Biogeographical regions — European Environment Agency \(europa.eu\)](#): Alpine, Atlantic, Black Sea, Boreal, Continental, Macaronesian, Mediterranean, Pannonian, Steppic

<i>Agreements</i>	In grants awarded under this topic, costs for infrastructure construction or renovation works shall not constitute more than 20% of the total eligible costs. Beneficiaries' own resources and/or mobilisation and leverage of additional investments from national and other EU programs and initiatives (such as EU Structural and Investment Funds) and/or other sources, private or public, should make up the remaining investment costs to secure the economic and financial sustainability of the project.
<i>Evaluation and award procedure</i>	Proposals that attain thresholds for each evaluation criteria will be ranked based on overall score. Following the overall ranking, the highest ranked proposals for each biogeographical area¹³ will be selected first, and until budget allows. Should budget be sufficient, eventually the second ranked proposals for each biogeographical area will be selected following the overall ranking and so forth, until budget is available. The biogeographical area focus of each proposal should be specified in the free keywords section of the proposal.

Expected Outcome: Projects results are expected to contribute to all of the following expected outcomes:

- Regions, local authorities and communities have taken the leadership and have been involved in identifying weaknesses and interlinkages between critical infrastructures¹⁴, and development and testing of solutions that will make their existing or new critical infrastructure more resilient to climate change, in line with the most recent guidelines for climate proofing.¹⁵
- Nature based solutions¹⁶ (with adequate social and environmental standards) protecting infrastructure from adverse effects of climate change have been developed, tested and brought closer to the market, increasing evidence for their viability and business

¹³ As defined by the Habitat Directive Council Directive 92/43/EEC of 21 May 1992 and the related Nature2000 legislation and as indicated by the EEA: [Biogeographical regions — European Environment Agency \(europa.eu\)](#): Alpine, Atlantic, Black Sea, Boreal, Continental, Macaronesian, Mediterranean, Pannonian, Steppic

¹⁴ As defined in art. 2(a) and art. 2(b) of Directive 2008/114/EC, 'critical infrastructure' means an asset, system or part thereof located in Member States which is essential for the maintenance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or destruction of which would have a significant impact in a Member State (or more Member States) as a result of the failure to maintain those functions

¹⁵ "Technical guidance on the climate proofing of infrastructure in the period 2021-2027", published in OJ C373 on 16.9.21

¹⁶ The EU Commission defines nature-based solutions as "Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions." Nature-based solutions must therefore benefit biodiversity and support the delivery of a range of ecosystem services

potential. Green, climate neutral and zero pollution technology solutions are broadly supported and opportunities for further inter-sectorial cooperation are fostered.

- Potential economic and social losses caused by extreme weather events and interruption of service due to critical infrastructures becoming unavailable are reduced, making the economy and the society as a whole more resilient through better preparation.
- Businesses, public and private actors are made more prepared to cope with the changing climate, also through climate adaptation targeted education and training, up- and re-skilling programmes.
- Prevention and management of emergency events linked to adverse climate effects is improved, thanks to “by design” integration of digital monitoring and relevant data sources in the solutions.

Scope: This topic relates to the Mission’s objectives to mobilise at least 150 regions in testing the solutions most locally needed to build climate resilience and to deliver at least 75 deep demonstrations of systemic transformations to climate resilience.

It complements the Climate Adaptation Mission topic 2021-CLIMA-02-03, which focussed on modelling aspects, as it mainly addresses demonstration of solutions on the ground, therefore providing a relevant context to eventually take further promising approaches already identified.

The proposal should identify weaknesses and interlinkages of critical infrastructures, in order to **develop and test innovative solutions**, combining technological and social innovation, leading to an increase of the resilience and adaptation capacity to climate change in the involved regions, local authorities and communities, assuring that nature-based solutions are explored as priority and at the very heart of the development whenever possible.

In line with the Mission Implementation Plan and moreover with the new EU Climate Adaptation Strategy, implementing nature-based solutions on a larger scale would increase climate resilience. Blue-green (as opposed to grey) infrastructures represent multipurpose, “no regret” solutions, which simultaneously provide environmental, social and economic benefits and help build climate resilience, which uptake can be facilitated by better quantification and communication of their benefits. Nature based solutions (NBS) essential role for sustaining healthy water, oceans, ecosystems and soils was recognised, together with their potential to reduce costs, provide climate-resilient services, and improve compliance with Water Framework Directive¹⁷ requirement for good ecological status, if they were to play a bigger role in land-use management and infrastructure planning. The resilience of nature-based solutions to climate change should also be taken into account.

As climate impacts, adaptive capacities and disaster risk reduction capabilities differ greatly across regions, the proposed scientific development and innovation should address specific needs identified **at regional and local scale** with tailor-made responses and measures, fully

¹⁷ Water Framework Directive (2000/60/EC)

acknowledging place-based governance, socio-economic and identity characteristics and other place-based data. The successful methodologies and protocols are expected to be adapted to other regions, for further uptake.

In line with the Mission objective to **build systemic climate resilience**, the proposal should address the local vulnerabilities in order to mitigate the potential risks on the infrastructure being it as potential natural disasters, extreme weather events or long-term changes in average climate), as well as their potential negative impacts on critical assets and infrastructures and the interdependencies between those.

For example, the acceleration of deployment of renewable energy is not without consequences on other environmental and geopolitical challenges. The interdependency of water and energy is set to intensify in the coming years, with significant implications for both energy and water security. Coal and gas power plants require a lot of water, but also renewable sources could increase water stress or be challenged by it, either during operation or during the construction stage. For instance, hydropower requires water to be operated, so that droughts and water shortages that are foreseen in the future for the Southern member states may significantly affect its generation capacity, while the increased water availability in the Northern states is expected to increase hydropower generation potential. Simultaneously, hydropower reservoirs can help in mitigating floods and store water, providing it during droughts. While wind or solar technologies require little water for their operation, but a significant amount (per installed power capacity) during their manufacturer process, biofuels, concentrated solar power, carbon capture, renewable hydrogen produced through electrolysis or even low-carbon technologies like nuclear are water-intensive. Understanding these interlinkages and develop and test solutions is therefore critical for the resilience of our economy and society, and to reduce sources of conflict.

Similarly, the achievement of a more interconnected Europe faces key challenges in the development of the interconnected transport networks and corridors, as changing groundwater levels, coastal storms frequency and their spatial incurrence, extreme temperatures, accelerated coastal erosion linked to sea level rise can have very negative effects on stability of rail and road infrastructures in coastal areas (clearly, this also affecting the development and lay down of energy and water networks laid in the proximity of coastal areas).

On that basis, the proposal should design and test solutions with the potential to reduce negative impacts both of long terms climate change and also of sudden extreme events attributable to climate change.

More specifically, the proposed solution should address:

- **Protecting critical infrastructure** from climate impacts and make it ready to withstand the changing climate and its consequences, in particular in terms of maintaining efficiency of operations, minimizing downtime, reducing maintenance costs and protecting the capital invested;

- Solutions for building and/or managing new critical infrastructure and/or upgrading/regenerating/revitalising/refurbishing existing ones through green/blue/hybrid infrastructure and if needed different governance structures, in particular in relation to climate-proofing it towards extreme events. Lifecycle ecological and CO2 footprint considerations, from sourcing the materials, including water and energy needed, through transportation of the material, building, maintenance and utilisation, should be embedded in the decision concerning the type of infrastructure approach to pursue;
- Inclusion of digital solutions and services to better predict, monitor and report on climate events, in particular towards improve forecasts of adverse events and triggering adequate risk management and emergency procedures, to protect both business and population, in particular the most vulnerable and marginalised, taking into consideration the interconnections between critical infrastructures and their operation;

Under the Mission approach, collaborations to develop and test effective solutions between regions/local authorities/ communities facing similar climate risks and similar infrastructure challenges are highly encouraged. To this purpose, the proposals must **include at least 4 demonstrations taking place in at least 4 regions/cities/communities**, which should collaborate in addressing the challenge. These (at least) 4 demonstrations must be **located in at least 3 different EU Member States and/or Horizon Europe associated countries**. Involvement in the proposal of regions eligible for Cohesion funds¹⁸ to conduct at least one of the proposed demonstrations shall be regarded as a positive element. In agreement with the authorities responsible for the territories where the actions will be implemented, the consortium should develop a scalability plan including the diffusion of the innovative solutions, and a process for commitments (including funding and governance) in assuring their large-scale deployment and long-term operation beyond the time-life of the project itself. The consortium should seek guarantees for the non-reversibility, sustainability and continuity of the action after the end of the project.

The proposals should clearly identify the biogeographical area, for which the proposed solution is relevant and should explore possible **reapplication to other regions**, starting from those located in the same biogeographical areas. To support a large impact, the proposed solutions should be widely re-applicable. To this purpose, identification and inclusion of **at least three “replicating” regions/local authorities/communities**, interested in reapplying the lessons learnt (totally, partially or with the required adjustments) in their territories is strongly encouraged; this could take the form of inclusion in the consortium of one or more partners providing support for the technical exchanges and the knowledge uptake in the “replicating” regions.

In addition to the local/regional authorities owning the climate challenge, the consortium may include other type of partners, such as private or public research organisations, enterprises, and NGOs to ensure that all needed capabilities are available to develop and implement real life actions.

¹⁸ Territories eligible for Cohesion funds are defined under the Cohesion policy: https://ec.europa.eu/regional_policy/sources/graph/poster2021/eu27.pdf?

Proposals should build (when relevant) upon previous developed or existing knowledge and adaptation solutions, designed and developed from previous projects, including from beyond EU, addressing climate change adaptation and funded by European and National programmes, in particular the European Union Framework programmes for Research and Innovation (such as Horizon 2020 and Horizon Europe under their different pillars and clusters), as well as the LIFE programme. Moreover, proposals should look into opportunities to scale up the solutions demonstrated and to foster their broad deployment across in Europe through the LIFE programme, and its integrated projects in particular, and through the European Regional Development Fund programmes.

Proposals should include a mechanism and the resources to establish operational links with the Climate-ADAPT platform (run by the European Environment Agency (EEA) together with DG CLIMA) that will act as a central element for the monitoring, support and visualisation of the Mission progress in European Regions. To this purpose, projects will feed their results to the Climate-ADAPT and EEA assessments.

Projects funded under this topic are strongly encouraged to participate in the Mission Community of Practice that will be established amongst the Mission Charter signatories by the Mission Implementation Platform in the course of 2023 and in the **networking and joint activities** with other projects funded under other topics in the Mission Climate Adaptation as well as in other relevant Missions, as appropriate. These networking and joint activities could, for example, involve the participation in joint workshops, the exchange of knowledge, the development and adoption of best practices, or joint communication activities. To this extent, proposals should provide for dedicated activities and earmark appropriate resources.

The European Commission intends to establish a network and coordination activities amongst all the projects funded for the implementation of the Climate adaptation Mission, under the Horizon 2020 European Green Deal call and under Horizon Europe, and that will be coordinated by the soon to be established Mission Implementation Platform. The projects under this topic will be requested to contribute to this effort. Applicants should acknowledge this request and already account for these obligations in their proposal, making adequate provisions in terms of resources and budget to engage and collaborate with the Mission governance. Beyond the Mission, the projects funded under this topic are also encouraged to exchange and identify cooperation opportunities with other projects funded under Horizon Europe, in particular those funded under Cluster 3, and its Destination 1 “Resilient Infrastructures”.

To ensure a **balanced portfolio** covering the different climate risks as identified in the Mission Implementation Plan and to maximize the footprint across all the different biogeographical areas¹⁹, the best ranked proposals for each biogeographical area will be selected.

¹⁹ As defined by the Habitat Directive Council Directive 92/43/EEC of 21 May 1992 and the related Nature2000 legislation and as indicated by the EEA: [Biogeographical regions — European Environment Agency \(europa.eu\)](#): Alpine, Atlantic, Black Sea, Boreal, Continental, Macaronesian, Mediterranean, Pannonian, Steppic

HORIZON-MISS-2023-CLIMA-01-03: Testing and demonstrating transformative solutions to build resilience towards health risks caused by the effects of climate change

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 4.50 and 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 18.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The conditions are described in General Annex B. In addition to the standard eligibility conditions, proposals must include demonstration activities to be carried out in 4 different regions/local authorities/ communities located in 3 different Member States /Associated Countries, involving and including in the consortium partners from these three countries. If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 6 to 7 by the end of the project – see General Annex B
<i>Evaluation and award procedure</i>	Proposals that attain thresholds for each evaluation criteria will be ranked based on overall score. Following the overall ranking, the highest ranked proposals for each biogeographical area²⁰ will be selected first, and until budget allows. Should budget be sufficient, eventually the second ranked proposals for each biogeographical area will be selected following the overall ranking and so forth, until budget is available. The biogeographical area focus of each proposal should be specified in the free keywords section of the proposal.

²⁰ As defined by the Habitat Directive Council Directive 92/43/EEC of 21 May 1992 and the related Nature2000 legislation and as indicated by the EEA: [Biogeographical regions — European Environment Agency \(europa.eu\)](#): Alpine, Atlantic, Black Sea, Boreal, Continental, Macaronesian, Mediterranean, Pannonian, Steppic

Expected Outcome: Projects results are expected to contribute to all of the following expected outcomes:

- regions, local authorities and communities have been involved in development and testing of a whole range of transformative solutions that will help to mitigate the effect of climate change on health and human wellbeing, including making the public health sector more climate resilient and better prepared to mitigate the climate change related health challenges.
- climate resilience solutions that protect human health have been developed, tested and are made largely available

Scope: This topic relates to the Mission's objectives to mobilise at least 150 regions in testing the solutions most locally needed to build climate resilience and to deliver at least 75 deep demonstrations of systemic transformations to climate resilience.

The proposals should test and demonstrate solutions that address both the two aspects below, including in the scope at least some of the individual points related to improve prevention and policy-making and at least some points related to improve preparedness of the health system.

1. Improve prevention and policy-making, by:

- **Improved insights into short- and long-term health effects of climate-related stressors**, including **planetary health** considerations (interactions between global climate change, ecosystem, animal and human health as described in the One Health concept). Taking into consideration differences between infectious and non-communicable diseases, and the particularities of each. With regard to the infectious diseases, emphasis should be given on the surveillance and prevention of zoonotic diseases. These improved insights should be made available and be integrated by the regional and local authorities in their planning. The European Climate and Health Observatory can contribute to these efforts and, reversely, learnings from the projects supported under this topic would contribute to the Observatory knowledge basis.
- **Strengthening comprehensive and user friendly epidemiological surveillance and modelling and forecasting tools**, including socio-economic trajectories and adaptation scenarios of exposure and vulnerability to climate determinants. These tools should be suitable for assessing and predicting impact of moderate, extreme and record-breaking events and disasters associated with climate change, including impacts on mental health. Environmental stressors should also be considered when relevant for the prevention of major non-communicable such as cardiovascular and respiratory diseases e.g. combination of heat waves and air pollution or increase in pollens. Surveillance, modelling and forecasting tools should be piloted in the partner regions and communities. Reflecting the One Health concept, the link between animal health impacts due to climate change and subsequent human health impacts should also be considered, when relevant.

- Development of **better forecast, early-warning and early response systems and decision-making models for health impacts** of climate change which are able to monitor both the impact and the effectiveness of solutions.
- Development and **health impact assessment of adaptation measures** and monitoring of effectiveness of solutions to improve resilience of countries, regions and cities, including effective nature-based solutions (NBS).

2. Improve preparedness of health systems by:

- **Development of innovative solutions (technological solutions, NBS, etc) to reduce impact of climate change on human health and wellbeing.** Heat and cold waves and floods should be among the stressors considered, but proposals should not limit their work to only these two stressors and might consider the association with environmental conditions such as the association of heat waves and air quality or exposure to pollens. Solutions should be designed with a win-win objective so to not have a negative effect on climate mitigation efforts, after sufficient consideration of positive and negative interactions.
- **Preparing training curricula on health and climate change** for medical and other healthcare professionals across Europe. The proposed curricula should be trailed in the partner regions, local authorities and communities, training pilot group of professionals.
- **Development of innovative, fit-for-purpose, end-user driven early warning and response systems or improving existing ones**, including a demonstration of their predictive/response capacity, to ensure a rapid response from health services and civil protection authorities and testing/pilot such systems in the partner regions/local authorities/communities.
- Providing feedback and sharing best practice from pilots to the new Health Emergency Preparedness and Response Authority. Such tests should be accompanied by **public awareness campaigns** in relation to climate forecasts and health early warning systems, identifying the warning communication chain, role, tasks and responsibilities of science advisors and decision-makers.

Under the Mission approach, collaborations to develop and test effective solutions between regions/local authorities/ communities facing similar challenges are highly encouraged. To this purpose, the proposals must **include at least 4 regions/local authorities/ communities**, which should collaborate in addressing the common challenge identified and conducting demonstration activities of the most suitable solutions. These (at least) 4 demonstrations must be **located in at least 3 different EU Member States and/or Horizon Europe associated countries**, for which the proposed solution is relevant. Involvement in the proposal of regions

eligible for Cohesion funds²¹ to conduct at least one of the proposed demonstrations shall be regarded as a positive element.

The proposals should clearly identify the biogeographical area, for which the proposed solution is relevant and should explore possible **reapplication to other regions**, starting from those located in the same biogeographical areas. To support a large impact, the proposed solutions should be widely re-applicable. To this purpose, identification and inclusion of **at least three “replicating” regions/local authorities/communities**, interested in reapplying the lessons learnt (totally, partially or with the required adjustments) in their territories is strongly encouraged; this could take the form of inclusion in the consortium of one or more partners providing support for the technical exchanges and the knowledge uptake in the “replicating” regions.

In addition to the local/regional authorities owning the climate challenge, the consortium may include other type of partners, such as private or public research organisations, enterprises and NGOs, to ensure that all needed capabilities are available to develop and implement real life actions.

Proposals should build (when relevant) upon previous developed solutions or existing knowledge and adaptation solutions, designed and developed from previous research projects, including from beyond EU, addressing climate change adaptation and funded by European and National programmes, in particular the European Union Framework programmes for Research and Innovation (such as Horizon 2020 and Horizon Europe under their different pillars and clusters), as well as the LIFE programme. Moreover, proposals should look into opportunities to scale up the solutions demonstrated and to foster their broad deployment across in Europe through the LIFE programme, and its integrated projects in particular, and through the ERDF programmes.

Proposals should include a mechanism and the resources to establish operational links with the Climate-ADAPT platform (run by the European Environment Agency (EEA) together with DG CLIMA) that will act as a central element for the monitoring, support and visualisation of the Mission progress in European Regions. To this purpose, projects will feed their results to the Climate-ADAPT and EEA assessments.

Projects funded under this topic are strongly encouraged to participate in the Mission Community of Practice that will be established amongst the Mission Charter signatories by the Mission Implementation Platform in the course of 2023 and in the **networking and joint activities** with other projects funded under other topics in the Mission Climate Adaptation as well as in other relevant Missions, as appropriate. These networking and joint activities could, for example, involve the participation in joint workshops, the exchange of knowledge, the development and adoption of best practices, or joint communication activities. To this extent, proposals should provide for dedicated activities and earmark appropriate resources. Beyond the Mission, the projects funded under this topic are also encouraged to exchange and identify

²¹ Territories eligible for Cohesion funds are defined under the Cohesion policy: https://ec.europa.eu/regional_policy/sources/graph/poster2021/eu27.pdf?

cooperation opportunities with other projects funded under Horizon Europe, in particular those funded under Cluster 1 and its destination 2 “Living and working in a health-promoting environment”

The European Commission intends to establish a network and coordination activities amongst all the projects funded for the implementation of the Climate adaptation Mission, under the Horizon 2020 European Green Deal call and under Horizon Europe, and that will be coordinated by the soon to be established Mission Implementation Platform. The projects under this topic will be requested to contribute to this effort. Applicants should acknowledge this request and already account for these obligations in their proposal, making adequate provisions in terms of resources and budget to engage and collaborate with the Mission governance.

To ensure a **balanced portfolio** covering the different climate risks as identified in the Mission Implementation Plan and to maximize the footprint across all the different biogeographical areas²², the best ranked proposals for each biogeographical area will be selected.

²² As defined by the Habitat Directive Council Directive 92/43/EEC of 21 May 1992 and the related Nature2000 legislation and as indicated by the EEA: [Biogeographical regions — European Environment Agency \(europa.eu\)](#): Alpine, Atlantic, Black Sea, Boreal, Continental, Macaronesian, Mediterranean, Pannonian, Steppic

Mission: Cancer

The goal of the Mission on Cancer is to improve the lives of more than 3 million people by 2030, through prevention, cure and for those affected by cancer including their families, to live longer and better. The objectives include: Understand; Prevent what is preventable; Optimise diagnostics and treatment; Support quality of life; Ensure equitable access in all aforementioned areas. The Mission on Cancer will address all cancers including poorly-understood cancers²³ in men and women, cancers in children, adolescents and young adults as well as in the elderly, cancers in socio-economically vulnerable populations, living in either cities, rural or remote areas, across all Member States and Associated countries.

The Mission on Cancer is implemented using a health-in-all policies approach²⁴; through infrastructure support; regional, social and citizen community development; through investments; support and commitments from public and private sources, including from Member States, Associated countries and industry; through cooperation with third countries; and through synergies with other existing EU programmes including EU4HEALTH, EURATOM, Digital Europe, Erasmus+, the EU Strategic Framework on Health and Safety at Work 2021-2027 and other initiatives related to cancer.

It also relates to the European Green Deal, including the Farm to Fork strategy²⁵. The mission proposes research and policy directions and objectives to identify effective strategies for the development and implementation of cancer prevention, including on environmental factors (e.g. exposure to workplace carcinogens, air pollution, unhealthy diet, nutrition and low physical activity).

Furthermore, it is also in line with the industrial²⁶ and digitalisation strategy²⁷. The mission proposes a further upscaling and digitalisation of services, innovation in diagnostics and interventions, and establishing living labs, contributing to the positive impact of efforts by industry and SMEs on the health of citizens. Envisaged opportunities are in the fields of: cancer biomarkers; cloud computing and digital applications, smart apps/sensors. The mission also supports the integration of AI, machine learning and deep learning approaches to facilitate a better understanding of cancer, to improve prevention screening and early detection, diagnosis, clinical decision-making, administration of combinational therapies, and clinical management of patients living with and after cancer.

²³ Includes refractory cancers or cancer subtypes, at any stage of the disease in any age group and part of society with a 5-year overall survival that is less than 50% from time of diagnosis.

²⁴ Health in All Policies is an approach to public policies across sectors that systematically takes into account the health implications of decisions, seeks synergies, and avoids harmful health impacts in order to improve population health and health equity.
https://www.who.int/social_determinants/publications/health-policies-manual/key-messages-en.pdf

²⁵ https://ec.europa.eu/food/farm2fork_en

²⁶ https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en

²⁷ https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age_en

Calls for proposals under this mission should contribute to setting out a credible pathway for implementing the Mission on Cancer, thereby contributing to mission objectives.

Proposals for topics under this Mission should set out a credible pathway to improving Cancer control, and more specifically to all of the following impacts:

- Improve understanding of the development of cancer in the context of the environment, work, and lifestyle in the broadest possible sense,
- Enhance cross-policy cancer prevention strategies,
- Optimise the diagnostics and treatment of cancer based on the principle of equitable access,
- Improve the quality of life of cancer patients, survivors and their families through widely analysing all key factors and needs that are related to the quality of life,
- Accelerate the digital transformation of research, innovation and health systems.

The implementation plan specifies the goal and four main objectives as well as implementation details of the Mission on Cancer²⁸.

In the calls described below, the Commission envisages several actions²⁹: On the Cancer Mission objective *Understanding*, the Commission plans to address tumour-host interactions to enhance prevention, treatment and care interventions in poorly-understood childhood as well as adult cancer patients. On the Cancer Mission objective *Prevention*, the Commission foresees an action on behaviour change. On the Cancer Mission objective *Diagnosis and treatment*, the Commission envisages an action on minimally invasive diagnostics, which will also improve the quality of life. On the Cancer Mission objective *Quality of life*, the Commission envisages to enhance the quality of life for survivors of childhood cancer by setting up oncology-centred living. The society will benefit from a reduced burden of cancer and solving healthcare barriers.

The following call(s) in this work programme contribute to this Mission:

Call	Budgets (EUR million)	Deadline(s)
	2023	
HORIZON-MISS-2023-CANCER-01	110.68	12 Apr 2023
Overall indicative budget	110.68	

²⁸

https://ec.europa.eu/info/sites/default/files/research_and_innovation/funding/documents/cancer_implementation_plan_for_publication_final_v2.pdf

²⁹

The listed areas for potential actions are tentative and non-binding.

Call - Research and Innovation actions supporting the implementation of the Mission on Cancer

HORIZON-MISS-2023-CANCER-01

Conditions for the Call

Indicative budget(s)³⁰

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) ³¹	Indicative number of projects expected to be funded
		2023		
Opening: 12 Jan 2023 Deadline(s): 12 Apr 2023				
HORIZON-MISS-2023-CANCER-01-01	RIA	36.68 ³²	7.00 to 12.00	3
HORIZON-MISS-2023-CANCER-01-02	RIA	25.00 ³³	4.00 to 6.00	5
HORIZON-MISS-2023-CANCER-01-03	RIA	43.00 ³⁴	6.00 to 8.00	7
HORIZON-MISS-2023-CANCER-01-04	IA	6.00 ³⁵	Around 6.00	1
Overall indicative budget		110.68		

³⁰ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

The Director-General responsible may delay the deadline(s) by up to two months.

All deadlines are at 17.00.00 Brussels local time.

The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

³¹ Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

³² Of which EUR 0.55 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 1.39 million from the 'Digital, Industry and Space' budget and EUR 34.74 million from the 'Health' budget.

³³ Of which EUR 0.77 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.56 million from the 'Digital, Industry and Space' budget and EUR 23.68 million from the 'Health' budget.

³⁴ Of which EUR 0.96 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 1.32 million from the 'Digital, Industry and Space' budget and EUR 40.72 million from the 'Health' budget.

³⁵ Of which EUR 0.18 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.13 million from the 'Digital, Industry and Space' budget and EUR 5.68 million from the 'Health' budget.

General conditions relating to this call	
<i>Admissibility conditions</i>	The conditions are described in General Annex A.
<i>Eligibility conditions</i>	The conditions are described in General Annex B.
<i>Financial and operational capacity and exclusion</i>	The criteria are described in General Annex C.
<i>Award criteria</i>	The criteria are described in General Annex D.
<i>Documents</i>	The documents are described in General Annex E.
<i>Procedure</i>	The procedure is described in General Annex F.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G.

Proposals are invited against the following topic(s):

HORIZON-MISS-2023-CANCER-01-01: Addressing poorly-understood tumour-host interactions to enhance immune system-centred treatment and care interventions in childhood, adolescent, adult and elderly cancer patients.

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 7.00 and 12.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 36.68 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Procedure</i>	The procedure is described in General Annex F. The following exceptions apply: In order to ensure a balanced cancer mission project portfolio and achieve the mission's goal, grants will be awarded to applications not only in order of ranking but also to at least one application that fully addresses cancer in children, adolescents

	or young adults (meaning people between birth and the age of 24), provided that the application attains all thresholds.
<i>Exceptional page limits to proposals/applications</i>	The page limit of the applications is 70 pages.

Expected Outcome: Proposals under this topic should aim for delivering results that are directed, tailored towards and contributing to all of the following expected outcomes:

- Researchers and health professionals understand tumour-host processes that spur cancer development and progression in patients and how this forms the basis for the future design and optimisation of treatment or care interventions for poorly-understood cancers and their subtypes, including in children, adolescents, adults and the elderly.
- Researchers and innovators from different disciplines and sectors support the development of the UNCAN.eu³⁶ platform by producing, integrating and correlating comprehensive data from multiple sources.
- Researchers, innovators, and health professionals ensure accessibility and re-usability of data, models and tools created.
- Health policy makers are aware of an improved understanding of tumour-host interactions in cancer patients that would allow the co-design of cancer-related innovation and health policies in the Member States, Associated Countries and beyond, including those aimed at delivering treatment and care developing care solutions for and with cancer patients.

Scope: This topic will contribute to the achievement of the mission's objective to better understand cancer. Tumour-host interactions underpinning the development and progression of cancer, including in advanced localised or metastatic disease. The focus should be on poorly-understood³⁷ cancers and their subtypes in children, adolescents, adults and the elderly.

Despite important progress and recent successes with, for example immune system-centred therapeutic interventions, such as cell-based and oncolytic viral therapy, therapeutic antibodies, therapeutic DNA, RNA and peptide vaccines; and multimodal interventions combining surgery, chemotherapy, and radiotherapy with immune system-centred interventions, understanding of tumour-host interactions in cancer patients remains incomplete. Challenges include which patients benefit from interventions and risk potentially debilitating side-effects, affordability of interventions across Europe, in children, adolescents, adults and the elderly. This requires a new dimension and level of investment in innovative

³⁶ Under the mission work programme a Europe-wide research and data platform, UNCAN.eu, will be established, utilising existing, relevant research infrastructures. The platform should enable integration of innovative models and technologies with longitudinal patient data, samples and biomarkers for identification and translation to patients. The 4.UNCAN.eu project is preparing a blueprint.

³⁷ Includes refractory cancers and their subtypes, at any stage of the disease in any age group and part of society, with a 5-year overall survival less than 50% from time of diagnosis.

research with a view to intercept disease, including high-risk, high-reward research projects to deliver a proof-of-concept of potentially disruptive new approaches in monitoring treatment and disease progression and disclosing disease pathways, such as through single-cell -omics technologies, advanced imaging technologies, or artificial intelligence and machine learning.

Proposals should address all of the following:

- Obtain a systematic understanding of processes underpinning tumour-host interactions in poorly-understood cancers and their subtypes in childhood, adolescent, adult and elderly cancer patients. Applicants should take into account social, ethnical, cultural and gender aspects, with a focus on the transition from a healthy state to cancer initiation and progression, including in advanced localised or metastatic disease (where relevant), using any relevant *in silico*, *in vitro*, *in vivo*, *ex vivo*, preclinical, or clinical disease models as well as computational, simulation and visualisation tools and technologies where appropriate.
- Combine knowledge and high-quality data from biomedical and clinical studies, and real-world data, using advanced digital tools and technologies such as computer modelling and artificial intelligence with the objective to understand relevant tumour-host interactions and their impact on treatment and care solutions for cancer patients.
- Demonstrate access to and use of multiple comprehensive databases in and beyond health research or health domains. Proposals should build on longitudinal clinically annotated, stratified patient cohorts, case-control studies, biobanks, registries and many other initiatives³⁸, use state-of-the art digital and other tools for data analyses and modelling, wherever possible.
- Based on results obtained, propose socially accepted novel treatment or care interventions or health technologies for uptake into health systems in the areas of treatment or care through approaches that involve the end-user through participative research models.
- The Commission may facilitate Mission-specific coordination through future actions, notably fostering exchanges with other proposals funded under this topic. Due consideration should be given to EU-funded initiatives such as: HealthyCloud³⁹, EOSC-Life⁴⁰, the Photonics21 partnership – including its Photon Hub Europe support service⁴¹, the Innovative Health Initiative partnership⁴², the European Health Data Space (EHDS) Joint Action⁴³, 1+ Million Genomes (1+MG)⁴⁴ / Beyond One Million Genomes

³⁸ Many retrospective, prospective cohorts, case-control studies and initiatives -in health and well-beyond health- at local, regional, national, European and international level, exist.

³⁹ <https://healthycloud.eu/>

⁴⁰ <https://www.eosc-life.eu>

⁴¹ <https://www.photonics21.org/index.php>; Photon Hub Europe: <https://www.photonhub.eu>

⁴² <https://www.ihp.europa.eu/>

⁴³ <https://tehdas.eu/>

⁴⁴ <https://digital-strategy.ec.europa.eu/en/policies/1-million-genomes>

(B1MG)⁴⁵, the EBrains⁴⁶ research infrastructure and the EIT Health Knowledge Innovation Community initiatives⁴⁷. Links with projects funded through topics HORIZON-INFRA-EOSC-2021-01-06 (FAIR and open data sharing in support of cancer research) and HORIZON-INFRA-SERV-2021-01-01 (Research infrastructures services to support research addressing cancer) as well as projects funded by other EU programmes⁴⁸ are encouraged.

Successful applicants will be asked to liaise with these and other initiatives where applicable⁴⁹. The successful proposals should build on resources made available by the Knowledge Centre on Cancer⁵⁰.

Therefore, proposals should include a budget for networking, attendance to meetings, and potential joint activities without the prerequisite to detail those at this stage. For example, the organisation of joint workshops, exchange of knowledge, establish best practices, or joint communication activities with projects funded under other clusters and pillars of Horizon Europe, or other EU programmes, as appropriate. The details of joint activities will be defined during the grant agreement preparation phase and project duration. In this regard, the Commission will take on the role of facilitator for networking and exchanges, including with relevant initiatives and stakeholders, if appropriate.

HORIZON-MISS-2023-CANCER-01-02: Enhance primary cancer prevention through sustainable behaviour change

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 4.00 and 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 25.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Procedure</i>	The procedure is described in General Annex F. The following exceptions apply:

⁴⁵ <https://b1mg-project.eu/>

⁴⁶ <https://ebrains.eu/>

⁴⁷ <https://eithealth.eu/who-we-are/>

⁴⁸ E.g. pilot projects on artificial intelligence for diagnosis and treatment of paediatric cancer selected for funding from the calls PPPA-AIPC-2020 and PPPA-AIPC-2021; Joint Action “JANE” under the EU4Health programme (“Network of Comprehensive Cancer Centres: Establishment of new EU Network of Expertise on Cancers and Cancer Conditions”).

⁴⁹ Applicants are not expected to contact these initiatives before the submission of proposals.

⁵⁰ Especially through the ‘European Guidelines and Quality Assurance Schemes for Breast, Colorectal and Cervical Cancer Screening and Diagnosis’, and the ‘European Cancer Information System (ECIS)’, see https://knowledge4policy.ec.europa.eu/cancer_en

	In order to ensure a balanced cancer mission project portfolio and achieve the mission's goal, grants will be awarded to applications not only in order of ranking but also to at least two applications that fully address cancer in children, adolescents or young adults (meaning people between birth and the age of 24), provided that the applications attain all thresholds.
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Expected Outcome: To enhance interventions and scale-up to different geographical, socio-economic and cultural settings as well as to different environmental conditions, proposals should aim at delivering results through sustainable behaviour change, which are directed, tailored towards and contributing to all of the following expected outcomes:

- Healthy citizens, including people at high risk of developing cancer, cancer patients and survivors benefit from health promotion and primary prevention programmes that reflect behaviour change and psycho-social approaches tailored to the specific needs of different population groups both in urban and rural areas;
- Healthy citizens, including people at high risk of developing cancer, cancer patients and cancer survivors benefit from easy-to-understand and accessible, tailored recommendations and support programmes on sustainable behaviour changes, including psycho-social care, that are easy to implement in their daily life, including through the use of digital tools to facilitate healthier choices;
- Regional, local and national policymakers and authorities, design and implement the most suitable, sustainable health promotion and prevention programmes, which take account of behaviour change and psycho-social requirements.

Scope: With about 40% of cancer cases being preventable⁵¹, prevention represents the most cost-efficient and sustainable cancer control strategy. The Mission on Cancer and the Europe's Beating Cancer Plan aim to exploit the potential of primary cancer prevention by addressing key risk factors and health determinants⁵².

Achieving sustainable behaviour change can play a major role in enhancing the impact of health promotion and preventive measures and thus contribute to reducing the number of preventable cancer cases. Despite having access to peer-reviewed existing evidence and recommendations⁵³ on cancer prevention, widely accepted by policymakers across the EU, their uptake to effectively changing behaviour needs to be enhanced.

In the past, evidence on how to achieve behaviour change, has not been sufficiently taken into account when designing health promotion and primary prevention programmes, as behaviour

⁵¹ Soerjomataram et al. (2018). <https://pubmed.ncbi.nlm.nih.gov/30445359/>

⁵² All known risk factors and health determinants, including socio-economic and commercial ones, e.g.: tobacco; alcohol; genetics; bacterial and viral pathogens; chemicals from air, soil, water, and food; physical inactivity; diet and nutrition; gut dysbiosis; behavioural patterns; exposure to ionising radiation, UV, radon; occupational exposure; socio-economic background, education, employment.

⁵³ For example: <https://policydatabase.wcrf.org/>

change is a complex challenge subject to manifold influences that should be better understood at individual and system levels, through public engagement and interdisciplinary approaches.

This requires a systemic approach involving all the main actors at different levels who can facilitate sustainable behaviour change including public authorities, policymakers, health care providers, employers, educational institutions, industry, non-governmental consumer and patient organisations, citizens and media.

Investments are needed to establish, scale-up or improve health promotion and cancer prevention programmes through increased awareness among citizens about cancer risk factors and related behaviour change, with a focus on hard-to-reach and vulnerable groups of the population.

Proposals should further address all of the following:

- Develop, test and evaluate the effective impacts of innovative primary cancer prevention programmes, possibly through the use of novel, including digital, solutions⁵⁴, for different population groups which should be involved in the design;
- Provide evidence-based cost-benefit analyses of the proposed programmes;
- Identify and address specific bottlenecks and barriers that prevent the uptake of sustainable behaviour change for different target populations, taking into account sectorial, socio-economic, cultural and geographical⁵⁵ conditions as well as gender and age;
- Identify the most appropriate actors and develop incentives promoting sustainable behaviour change, such as increasing the uptake of the European Code against Cancer⁵⁶;
- Assess and validate parameters and factors facilitating or impeding behavioural change, and measure their impact;
- In addition, attention should be paid to health determinants, including occupational and environmental factors (e.g. pollution), education, socio-economic status, gender, age, and inequalities in access to prevention programmes, affecting for example elderly people, people with disabilities, or minorities and people living in rural areas.
- Approaches how to best reach and involve disadvantaged socio-economic population groups, vulnerable groups, and people living in rural areas, should be developed.

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities.

⁵⁴ Such as e-learning platforms, apps and wearables

⁵⁵ Across and within countries, covering the urban-rural dimension.

⁵⁶ [European Code Against Cancer - International Agency for Research on Cancer \(IARC\). European Commission: 12 ways to reduce your cancer risk.](#)

Applicants should demonstrate awareness of relevant evidence on behaviour change and behavioural insight⁵⁷. The Commission may facilitate Mission-specific coordination through future actions. Therefore, proposals should include a budget for networking, attendance to meetings, and potential joint activities without the prerequisite to detail those at this stage. For example, the organisation of joint workshops, exchange of knowledge, establish best practices, or joint communication activities with projects funded under other clusters and pillars of Horizon Europe, or other EU programmes, as appropriate. The Commission will take on the role of facilitator for networking and exchanges, including with proposals funded under this topic and relevant initiatives and stakeholders. The funded actions should build upon resources made available by the Knowledge Centre on Cancer⁵⁸.

The details of joint activities will be defined during the grant agreement preparation phase. Of particular interest in this context are the Climate-neutral and Smart Cities Mission, the EU Mission “A Soil Deal for Europe” as well as the successful proposals resulting from the topics HORIZON-MISS-2022-CANCER-01-01, “Improving and upscaling primary prevention of cancer through implementation research”, to be known by early 2023, and HORIZON-CL6-2021-FARM2FORK-01-15, “Transition to healthy and sustainable dietary behaviour”. Activities should, where appropriate, complement the EU Non-Communicable Diseases Initiative “Healthier together”⁵⁹.

HORIZON-MISS-2023-CANCER-01-03: Pragmatic clinical trials on minimally invasive diagnostics

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 6.00 and 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 43.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Procedure</i>	The procedure is described in General Annex F. The following exceptions apply: In order to ensure a balanced cancer mission project portfolio and achieve the mission’s goal, grants will be awarded to applications not only in order

⁵⁷ For example: OECD (2017), Behavioural Insights and Public Policy: Lessons from Around the World, OECD Publishing, Paris, <https://doi.org/10.1787/9789264270480-en>; https://knowledge4policy.ec.europa.eu/behavioural-insights/topic/behavioural-insights-health_en

⁵⁸ Especially through the ‘European Guidelines and Quality Assurance Schemes for Breast, Colorectal and Cervical Cancer Screening and Diagnosis’, and the ‘European Cancer Information System (ECIS)’, see https://knowledge4policy.ec.europa.eu/cancer_en

⁵⁹ https://health.ec.europa.eu/non-communicable-diseases_en

	of ranking but also to at least two applications that fully address cancer in children, adolescents or young adults (meaning people between birth and the age of 24), provided that the applications attain all thresholds.
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Expected Outcome: Proposals under this topic should aim for delivering results that are directed, tailored towards and contributing to all of the following expected outcomes:

- Cancer patients and their caregivers have access to optimised and affordable, minimally-invasive diagnostic interventions that increase their quality of life, across European regions, Member States and Associated Countries;
- Healthcare professionals and academia deliver better outcomes through routine healthcare, including quality of life, for men and women with cancer who often suffer from sex-related co-morbidities and side-effects;
- National healthcare providers, policymakers and authorities in European Regions, Member States and Associated Countries will have the evidence to implement optimised and affordable minimally-invasive diagnostics in their healthcare systems, including in everyday medical practice.

Scope: While cancer research and innovation have generated novel treatment options, cancer patients across Europe need access to minimally-invasive, patient-centred diagnostic interventions which keep up with increasing demand in a complex and fragmented oncology healthcare landscape with increasing healthcare costs.

Furthermore, the COVID-19 pandemic with its detrimental impact on cancer control has demonstrated the need for different clinical trial designs with fewer inclusion and exclusion criteria that would allow evaluation of real-world effectiveness, driving better and affordable diagnostic solutions that are widely accessible across European regions, Member States and Associated Countries.

Healthcare professionals and academia generate clinical evidence, by evaluating effectiveness in randomised or cluster-randomised academic investigator-initiated⁶⁰ pragmatic clinical trials, on how to best perform and deploy evidence-based, minimally-invasive diagnostic interventions.

Pragmatic clinical trials focus on choosing between care options. Pragmatic trials evaluate effectiveness, the effect of diagnostics in routine (real-world) clinical practice.

Proposals should address all of the following:

- Design and conduct randomised or cluster-randomised academic investigator-initiated pragmatic clinical trials to deliver effective and evidence-based diagnostic interventions for implementation by healthcare systems at the level of local communities, European

⁶⁰ Clinical trials in which a health technology (e.g. a medicinal product, a medical device, an in-vitro diagnostic medical device, a surgical or other medical intervention) is tested in humans, independently from commercial interest and for public health benefits.

regions, Member States and Associated Countries, taking into account stratification, such as biology, molecular features, sex & gender, cancer stage, and age. Clinical trial design and conduct could be aided by computational, simulation and visualisation tools and technologies where appropriate.

- The chosen diagnostic intervention(s) should be adapted to the particular needs of the target population and to the specificities of the provision of care at local, regional, or national level, duly reflecting the diversity across Member States and Associated Countries. Furthermore, affordability and accessibility should be taken into account.
- The successful proposals should clearly justify and describe the evidence supporting the chosen diagnostic intervention.
- The primary and secondary endpoints of the pragmatic clinical trial should support overall survival, patient-preferred clinical benefit, patient-reported outcomes and quality of life issues considered important by and for cancer patients and their caregivers.
- Such endpoints should be defined together with patients and their caregivers through research that uses open knowledge, (social) innovation systems and support end-user engagement, such as living labs⁶¹ or other participative research models.
- Implementers of pragmatic clinical trials and trial results should include relevant stakeholders such as physicians, academia, patients and their caregivers, patient representatives, SMEs, insurance companies, charities and foundations, research organisations, civil society, regional and national research, innovation and health authorities.
- Successful pragmatic clinical trials, including their analyses, should be completed within 5 years after the start of the project. Translational research is not within the scope of this topic.
- In all instances, sex- and gender-related issues must be taken into account. All data should be disaggregated by sex, gender, age and other relevant variables, such as by measures of socio-economic status or ethnicity.

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities

The Commission may facilitate Mission-specific coordination through future actions. Therefore, proposals should include a budget for networking, attendance to meetings, and potential joint activities without the prerequisite to detail those at this stage. For example, the organisation of joint workshops, exchange of knowledge, establish best practices, or joint

⁶¹ <https://enoll.org/>

communication activities with projects funded under other clusters and pillars of Horizon Europe, or other EU programmes, as appropriate.

The details of joint activities will be defined during the grant agreement preparation phase and project duration. In this regard, the Commission will take on the role of facilitator for networking and exchanges, including with relevant initiatives and stakeholders, if appropriate.

HORIZON-MISS-2023-CANCER-01-04: Establish best practices and tools to improve the quality of life for childhood cancer patients, survivors and their families in European regions

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 6.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: A written commitment is required from the participating regions in which the action proposed will be implemented, expressed by a letter of intent annexed to the proposal and signed by the corresponding authority/ies.

Expected Outcome: Proposals under this topic should aim for delivering results that are directed, tailored towards and contributing to all of the following expected outcomes

- Childhood cancer patients, survivors and their families benefit from enhanced quality of life through better supportive care, personalised counselling approaches, and digital tools. Consequently, they can better achieve their values and personal life goals.
- Health care professionals, supportive workers and councillors enhance the quality of life for childhood cancer patients, survivors and their families.

Scope: Best practices and tools to improve the quality of life for survivors of childhood cancer exist at national, regional and local level. These practices and tools should be scaled up or deployed in regions in at least three different Member States or Associated Countries in order to serve as demonstrators for wider uptake.

Proposals should address all of the following:

- Best practices and validated tools (such as digital tools) related to for example education, sports, employment, medical follow-up including mental and physical health and well-being, or reproductive matters, should be tested and scaled up in regions in at least three different Member States or Associated Countries;
- Address hurdles, factors and situations that impede implementation of good practices and tools in real-life settings with the intention to make life of childhood cancer survivors easier and better. Effectiveness and general applicability should be assessed and evaluated to provide enhanced real solutions in practice;
- Attention should be paid to social and health determinants, including sex, gender, age and other relevant variables, such as socio-economic status and education;
- Several best practices and tools should be chosen and scaled up together with childhood cancer survivors and their families. The use of participative research models, such as oncology-centred living labs⁶² or other approaches to deliver (social) innovation should be considered.

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities.

Successful applicants should closely monitor and take the outcome of the action on unmet needs (HORIZON-MISS-2021-CANCER-02-02) into account during the lifetime of the project.

The Commission may facilitate Mission-specific coordination through future actions. Therefore, proposals should include a budget for networking, attendance to meetings, and potential joint activities without the prerequisite to detail those at this stage. For example, the organisation of joint workshops, exchange of knowledge, establish best practices, or joint communication activities with projects funded under other clusters and pillars of Horizon Europe, or other EU programmes, as appropriate.

The details of joint activities will be defined during the grant agreement preparation phase and project duration. In this regard, the Commission will take on the role of facilitator for networking and exchanges, including with relevant initiatives and stakeholders, if appropriate.

⁶² <https://enoll.org/>

Mission: Restore our Ocean and Waters by 2030

The Mission ‘Restore our ocean and waters by 2030’ will provide a systemic approach for the restoration, protection and preservation of our ocean, seas and waters. The objective of this Mission is to restore, protect and preserve the health of our ocean, seas and waters by 2030. The Mission is designed to deliver on the European Union’s 2030 quantified and measurable targets for protecting and restoring ecosystems and biodiversity, for zero pollution, and for decarbonisation and net greenhouse gas emissions reduction towards climate-neutrality, within the EU’s ocean, seas and waters. The Mission will support many Sustainable Development Goals (SDGs): in particular restoring our ocean and waters related actions will directly contribute to SDG 14 - Life below water and SDG 6 - Clean water and sanitation, as well as to SDG13 - Climate action.

The Mission will also contribute to the UN Decade of Ocean Science for Sustainable Development⁶³ by fostering research and cooperation across European sea basins, including the EU Outermost Regions and beyond, and mobilise scientists, as well as citizens for a sustainable and healthy ocean, seas and waters.

The implementation plan specifies the goal and objectives as well as implementation details of the Mission “Restore our Ocean, seas and waters by 2030”⁶⁴.

The Mission Work Programme, under Horizon Europe, will contribute to the recovery of our ocean and waters by 2030 and more specifically to the following objectives:

1. Protect and restore marine and freshwater ecosystems and biodiversity, in line with the EU Biodiversity Strategy 2030⁶⁵;
2. Prevent and eliminate pollution of our ocean, seas and waters, in line with the EU Action Plan Towards Zero Pollution for Air, Water and Soil⁶⁶;
3. Make the sustainable blue economy carbon-neutral and circular, in line with the proposed European Climate Law⁶⁷ and the holistic vision enshrined in the Communication on a new approach for a Sustainable Blue Economy⁶⁸.

The Mission will be implemented in two phases:

- In the first ‘development and piloting’ phase (2022-2025), research and innovation will lay the foundations for implementing the three Mission objectives and enabling actions, paving the way to further citizens participation and engagement. Research and

⁶³ <https://www.oceandecade.org/>

⁶⁴ https://ec.europa.eu/info/sites/default/files/research_and_innovation/funding/documents/ocean_and_waters_implementation_plan_for_publication.pdf

⁶⁵ COM/2020/380 final

⁶⁶ COM/2021/400 final

⁶⁷ COM/2020/563 final

⁶⁸ COM/2021/240 final

innovation activities will support transformative and innovative solutions to be tested, piloted and validated. Enabling activities will generate new knowledge, observation and monitoring data.

- In the second ‘deployment and upscaling’ phase (2026-2030), the solutions will be further deployed, replicated and scaled up.

The Mission ocean and waters supports research and innovation in a system of European and national funding programmes sharing policy objectives. To foster synergies between R&I funding instruments (European and national), align R&I investments, ensure access to excellence and translate research results for the benefit of the society and the economy, applicants should consider and actively seek complementarities with, and where appropriate possibilities for further funding from other R&I-relevant EU, national or regional programmes for a sustainable blue economy, notably EMFF/EMFAF, LIFE, ERDF, ESF+, JTF, CEF Inland Waterways or Maritime and InvestEU, as well as private funds or financial instruments. All actions of the Mission are expected to disseminate their results according to FAIR (findable, accessible, interoperable, reusable) principles compatible with ongoing EU initiatives such as the European Marine Observation and Data Network (EMODnet) and the European Open Science Cloud (EOSC). In line with this approach, specific actions within the Mission will be devoted to widening access to data and knowledge of oceans, seas and freshwater through the Digital Twin Ocean (Mission ocean and waters digital knowledge system).

All proposals submitted to the calls listed below are required to show how their proposed activities and results will achieve the Mission’s objectives, in line with the timeframe of the Mission phases, i.e.: by 2025 for the ‘development and piloting’ phase and 2030 for the ‘deployment and upscaling phase’.

In the 2023 work programme, in addition to the call under the heading ‘Mission Restore our ocean and waters by 2030’ (Call HORIZON-MISS-2023-OCEAN-01- Actions for the implementation of the Mission Restore our ocean and waters by 2030) the Mission ocean and waters also developed 2 joint calls with Mission ‘Soil Deal for Europe’ and Mission ‘Adaptation to Climate change’ which are under the heading ‘Missions’ joint calls’:

- Joint Call between Mission Restore our Ocean and Waters by 2030, Mission Adaptation to Climate Change and Mission A Soil Deal for Europe - HORIZON-MISS-2023-CLIMA-OCEAN-SOIL-01 - Demonstration of climate mitigation and resilience solutions in support of the implementation of the Adaptation to Climate Change, Restore our Ocean and Waters by 2030 and A Soil Deal for Europe Missions;
- Joint Call between Mission Restore our Ocean and Seas by 2030 and Mission A Soil Deal for Europe - HORIZON-MISS-2023-OCEAN-SOIL-01 - Mission Ocean & waters and Mission Soil Deal for Europe Joint demonstration of approaches and solutions to address nutrient pollution in the landscape-river-sea system in the Mediterranean sea basin.

***Horizon Europe - Work Programme 2023-2024
Missions***

The following call(s) in this work programme contribute to this Mission:

Call	Budgets (EUR million)	Deadline(s)
	2023	
HORIZON-MISS-2023-OCEAN-01	87.70	20 Sep 2023
Overall indicative budget	87.70	

DRAFT

Call - Actions for the implementation of the Mission Restore our ocean and waters by 2030

HORIZON-MISS-2023-OCEAN-01

Conditions for the Call

Indicative budget(s)⁶⁹

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) ⁷⁰	Indicative number of projects expected to be funded
		2023		
Opening: 17 Jan 2023 Deadline(s): 20 Sep 2023				
HORIZON-MISS-2023-OCEAN-01-01	IA	8.80 ⁷¹	Around 8.80	1
HORIZON-MISS-2023-OCEAN-01-02	IA	17.00 ⁷²	Around 8.50	2
HORIZON-MISS-2023-OCEAN-01-03	IA	16.00 ⁷³	Around 8.00	2
HORIZON-MISS-2023-OCEAN-01-04	IA	12.00 ⁷⁴	Around 4.00	3

⁶⁹ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
The Director-General responsible may delay the deadline(s) by up to two months.
All deadlines are at 17.00.00 Brussels local time.

The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

⁷⁰ Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

⁷¹ Of which EUR 0.39 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.22 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 1.75 million from the 'Digital, Industry and Space' budget and EUR 0.21 million from the 'Civil Security for Society' budget and EUR 6.24 million from the 'Climate, Energy and Mobility' budget.

⁷² Of which EUR 0.75 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.42 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 3.39 million from the 'Digital, Industry and Space' budget and EUR 0.40 million from the 'Civil Security for Society' budget and EUR 12.05 million from the 'Climate, Energy and Mobility' budget.

⁷³ Of which EUR 0.71 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.39 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 3.19 million from the 'Digital, Industry and Space' budget and EUR 0.37 million from the 'Civil Security for Society' budget and EUR 11.34 million from the 'Climate, Energy and Mobility' budget.

Horizon Europe - Work Programme 2023-2024
Missions

HORIZON-MISS-2023-OCEAN-01-05	IA	12.00 ⁷⁵	Around 4.00	3
HORIZON-MISS-2023-OCEAN-01-06	RIA	4.50 ⁷⁶	Around 2.25	2
HORIZON-MISS-2023-OCEAN-01-07	RIA	1.40 ⁷⁷	Around 1.40	1
HORIZON-MISS-2023-OCEAN-01-08	RIA	10.00 ⁷⁸	Around 3.30	3
HORIZON-MISS-2023-OCEAN-01-09	CSA	2.00 ⁷⁹	Around 2.00	1
HORIZON-MISS-2023-OCEAN-01-10	CSA	2.00 ⁸⁰	Around 2.00	1
HORIZON-MISS-2023-OCEAN-01-11	CSA	2.00 ⁸¹	Around 2.00	1
Overall indicative budget		87.70		

⁷⁴ Of which EUR 0.53 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.29 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 2.39 million from the 'Digital, Industry and Space' budget and EUR 0.28 million from the 'Civil Security for Society' budget and EUR 8.50 million from the 'Climate, Energy and Mobility' budget.

⁷⁵ Of which EUR 0.53 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.29 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 2.39 million from the 'Digital, Industry and Space' budget and EUR 0.28 million from the 'Civil Security for Society' budget and EUR 8.50 million from the 'Climate, Energy and Mobility' budget.

⁷⁶ Of which EUR 0.20 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.11 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.90 million from the 'Digital, Industry and Space' budget and EUR 0.11 million from the 'Civil Security for Society' budget and EUR 3.19 million from the 'Climate, Energy and Mobility' budget.

⁷⁷ Of which EUR 0.06 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.03 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.28 million from the 'Digital, Industry and Space' budget and EUR 0.03 million from the 'Civil Security for Society' budget and EUR 0.99 million from the 'Climate, Energy and Mobility' budget.

⁷⁸ Of which EUR 0.44 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.24 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 1.99 million from the 'Digital, Industry and Space' budget and EUR 0.23 million from the 'Civil Security for Society' budget and EUR 7.09 million from the 'Climate, Energy and Mobility' budget.

⁷⁹ Of which EUR 0.09 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.05 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.40 million from the 'Digital, Industry and Space' budget and EUR 0.05 million from the 'Civil Security for Society' budget and EUR 1.42 million from the 'Climate, Energy and Mobility' budget.

⁸⁰ Of which EUR 0.09 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.05 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.40 million from the 'Digital, Industry and Space' budget and EUR 0.05 million from the 'Civil Security for Society' budget and EUR 1.42 million from the 'Climate, Energy and Mobility' budget.

⁸¹ Of which EUR 0.09 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.05 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.40 million from the 'Digital, Industry and Space' budget and EUR 0.05 million from the 'Civil Security for Society' budget and EUR 1.42 million from the 'Climate, Energy and Mobility' budget.

General conditions relating to this call	
<i>Admissibility conditions</i>	The conditions are described in General Annex A.
<i>Eligibility conditions</i>	The conditions are described in General Annex B.
<i>Financial and operational capacity and exclusion</i>	The criteria are described in General Annex C.
<i>Award criteria</i>	The criteria are described in General Annex D.
<i>Documents</i>	The documents are described in General Annex E.
<i>Procedure</i>	The procedure is described in General Annex F.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G.

Objective 1 - Protect and restore marine and freshwater ecosystems and biodiversity

Proposals under this heading are expected to show how their activities and results will achieve the Mission objective 1, in line with the timeframe of the Mission phases, i.e.: by 2025 for the ‘development and piloting’ phase and 2030 for the ‘deployment and upscaling phase’.

Proposals are invited against the following topic(s):

HORIZON-MISS-2023-OCEAN-01-01: European Blue Parks – Protection and restoration of marine habitats

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 8.80 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 8.80 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply:

	If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 5-7 by the end of the project – see General Annex B.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Beneficiaries will be subject to the following additional obligations regarding open science practices: If projects collect in-situ data and marine observations, beneficiaries must make them openly available through the European Marine Observation and Data network (EMODnet), based on FAIR (findable, accessible, interoperable, reusable) principles.

Expected Outcome: To support the implementation of the European Green Deal, the Biodiversity Strategy and the Nature Restoration Law, project results are expected to contribute to all of the following expected outcomes:

- Effectively managed marine protected areas with clear science-based conservation objectives and conservation measures that contribute to the restoration and protection of marine ecosystems and support a shift towards strictly protected areas;
- Protection and restoration of marine habitats and species through strictly protected areas, in particular of seabed habitats, including to preserve their carbon sequestration capacity, ensure spill-over of fish, provide ecosystem functionality and maintain connectivity;
- Enhanced resilience and adaptation potential of coastal and marine ecosystems and improved provision of their ecosystem services, in particular in relation to climate change mitigation/adaptation and to fisheries;
- A blueprint for the designation and management of marine protected areas and/or for shifting their status from “protected” to “strictly protected” including criteria and tools for quantifying their success/ effectiveness in terms of conservation outcomes/results; a blueprint for the identification of ecological corridors as part of a blue Trans-European Nature Network;
- Active support to the Mission’s Digital Ocean and Water Knowledge system through advances in biological, ecosystem and socio-economic knowledge applied to restoration;
- Reinforced EU leadership in international efforts to stop and reverse biodiversity loss, in line with the EU key priorities and international commitments.

Scope: Proposals under this topic are expected to show how their activities and results will achieve the Mission objective 1 - Protect and restore marine and freshwater ecosystems and biodiversity, in line with the timeframe of the Mission phases, i.e.: by 2025 for the ‘development and piloting’ phase and 2030 for the ‘deployment and upscaling phase’.

Proposals under this topic will develop and demonstrate protection and restoration solutions to address the degradation of coastal and marine ecosystems. Proposals should significantly improve the management of marine protected areas in particular through definition of clear science-based conservation objectives and implementation of the necessary conservation measures to achieve those objectives. Amongst the conservation measures, proposals should entail implementation of passive restoration actions through e.g.: strict protection, either as a newly designated strictly protected areas or as part of the zoning in the existing marine protected areas. Proposals should address the whole marine ecosystem functioning in the designated area, including the seabed and its role in carbon storage and as fish spawning and nursery area. Nevertheless, in well justified cases, proposals may address either specific vulnerable species or habitats that are under strong pressures or that have the most potential to capture and store carbon. Proposals could consider and assess pros and cons of some active restoration activities whereby native habitat building species would be reintroduced in degraded marine and coastal habitats to facilitate the natural recovery.

Proposals should be site-specific, and the scale and range of the protected area for demonstration activities has to be ecologically relevant and impactful. At the same time, proposals should show a significant replication potential.

When identifying and restoring degraded areas, particular attention needs to be paid to ensuring that the ecosystem services these areas can provide are resilient to climate change and that the areas are adequately protected to prevent new degradation. Proposals should develop innovative, efficient and cost-effective tools and methods to measure the conservation results/outcomes in terms of improvements of biodiversity in demonstration areas.

The proposals should also address the creation and long term maintenance of adequate conditions for habitats and/or for the movement of individuals and more generally species and for increasing ecosystems’ capacity to adapt to climate change. Proposals should cover a wide range of ecosystem functions and services using a coherent and systemic approach and avoid the risk of trade-offs of focusing on one or very few ecosystem services at the expense of others. In this respect, seabed protection and restoration should be integrated, including preservation of seabed carbon sequestration capacity. The approach proposed has to show the potential to be up-scaled and reproduced at European level and beyond and develop a scalability plan.

The proposed innovation actions for the Blue Parks should seek the most effective and efficient management and supporting technologies to enable strict protection as restoration

measure and will closely follow the EU Guidance to Members States on the designation of additional protected or strictly protected areas⁸².

Proposals are expected to contribute to the implementation of the existing legislation related to MPAs, notably the Birds, Habitats and Marine Strategy Framework Directives. Proposals may consider marine Natura 2000 sites established under the Birds and Habitats Directives as well as explore new areas to reach the targets of protecting 30% of EU marine area by 2030, of which one third should be strictly protected.

National and local authorities and coastal communities should be involved in the design and implementation of innovative solutions to ensure that these solutions are successfully implemented in the long-term. Citizen engagement is a pillar concept for the Mission and a key element in relation to conservation and restoration actions. Activities should, therefore, use innovative participatory management practices, citizen-science initiatives and awareness-raising actions to promote a proactive involvement of local communities including scientists, land and sea use planners, marine protected area managers, and other stakeholders, to enable co-creation of solutions. Awareness raising actions to inspire and generate co-ownership for protection of local habitat and biodiversity should be included as well as collaboration with existing initiatives. Citizen engagement related activities should also be gender-responsive and socially inclusive.

Proposals are expected to contribute to the implementation of the existing legislation, notably in relation to Natura 2000 and Marine Protected Areas, as well as to provide recommendations addressing environmental or anthropogenic pressures and how to overcome them. Governance issues could be examined as a way to ensure effectiveness of protection and conservation measures. Activities improving the state of vulnerable ecosystem conditions are expected to be integrated into best practices or innovative monitoring within relevant monitoring governance schemes.

Proposals should build links with the Mission implementation monitoring system which will be part of the Mission Implementation Support Platform and with the Blue Parks technical support platform which enables the reporting, monitoring, and coordination of all relevant implementation activities. In this regard, projects should cooperate closely with projects funded under Mission Ocean topic HORIZON-MISS-2021-OCEAN-02-01 and topic HORIZON-MISS-2022-OCEAN-01-01.

Proposals should build upon existing knowledge systems and upon the Mission Digital and Water Knowledge system for access to data, monitoring and forecasts and knowledge dissemination. The proposals should also build on research and innovation developed by projects financed under the current and/or previous EU framework programmes (Horizon 2020, in particular FutureMARES, MaCoBios and Rest-Coast projects, LIFE, EMFF/EMFAF), national and regional programmes (e.g. Interreg 2021-2027 / EU Macroregional Strategies) as well as on the activities of the Sustainable Blue Economy Partnership and the Biodiversa+ Partnership.

⁸² [SWD_guidance_protected_areas.pdf \(europa.eu\)](#)

For improved coordination and networking, the applicants should set aside resources to engage with other actions funded under Horizon Europe in particular projects funded under Cluster 6 topics, e. g.: HORIZON-CL6-2021-BIODIV-01-12 (Improved science based maritime spatial planning and identification of marine protected areas), HORIZON-CL6-2021-BIODIV-01-10 (Demonstration of measures and management for coastal and marine ecosystems restoration and resilience in simplified socio-ecological systems); HORIZON-CL6-2021-BIODIV-01-03 (Understanding and valuing coastal and marine biodiversity and ecosystems services); HORIZON-CL6-2021-BIODIV-01-04 (Assess and predict integrated impacts of cumulative direct and indirect stressors on coastal and marine biodiversity, ecosystems and their services); HORIZON-CL6-2022-CLIMATE-01-02: Understanding the oceanic carbon cycle as well as with activities supported under the H2020 Green Deal call, notably LC-GD-7-1- 2020 Restoring biodiversity and ecosystem services. Additionally, projects should collaborate with projects funded under the topic HORIZON-INFRA-2022-EOSC-01-03 to adopt best practices regarding FAIR and open data sharing.

Proposals addressing the EU Outermost Regions are encouraged given these regions' natural assets.

HORIZON-MISS-2023-OCEAN-01-02: Danube river basin lighthouse – Demonstration of effective and sustainable management of sediments in the Danube river-Black sea system

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 8.50 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 17.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used). In addition to the standard eligibility conditions, the consortium must involve and include entities from at least three Member States and/or Associated Countries of the Danube river basin in which demonstration activities will be taking place.
<i>Technology</i>	Activities are expected to achieve TRL 5-7 by the end of the project –

<i>Readiness Level</i>	see General Annex B.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The financial support to third parties may only be awarded to local and/or regional authorities from an ‘associated region’. The maximum amount to be granted to each “associated region” is EUR 100,000, to showcase the feasibility, replicability and scalability of the solutions developed within the project in the “associated region”⁸³. Each “associated region” may benefit from the Financial Support to Third Parties provided under this topic within the duration of the project only once. Beneficiaries will be subject to the following additional obligations regarding open science practices: If projects collect in-situ data and marine observations, beneficiaries must make them openly available through the European Marine Observation and Data network (EMODnet), based on FAIR (findable, accessible, interoperable, reusable) principles.

Expected Outcome: Project results are expected to contribute to all of the following expected outcomes:

- Contribution to the implementation of the European Green Deal and the Water Framework Directive and related guidance documents as well as other EU instruments and policies that concern freshwater ecosystem protection, in particular to the implementation of the Updated River Basin Management Plan for Danube⁸⁴ (2021) as regards sustainable sediment management in the Danube river basin;
- Demonstrated sustainable and effective solutions for sediment management at a river basin scale, including solutions for the restoration of sediment balance and, quality and flow in the Danube river-Black sea system;
- Measurable improvements in the quality (including presence of harmful chemicals, plastics and microplastics) and quantity of sediments flows demonstrate the effectiveness of the measures and solutions implemented;
- Improved transnational and trans-sectoral cooperation between national authorities and other actors involved in sediment management at river basin scale;

⁸³ ‘Associated regions’ are understood as areas with ecosystems that can benefit from the demonstration activities (e.g. neighbouring regions and/or regions in a different river basin) and/or less-developed regions, with the view to build capacity to implement the innovative solutions to restore freshwater ecosystems. The proposals should ensure that the associated regions are located in Member States/Associated countries other than those that are part of the project consortium.

⁸⁴ Updated Danube River Basin management Plan.

- Scaling up of solutions for sustainable river basin scale management of sediments in other European river basins through an involvement of river basin management bodies and ‘associated regions’.

Scope: Proposals under this topic are expected to show how their activities and results will achieve the Mission objective 1 - Protect and restore marine and freshwater ecosystems and biodiversity, in line with the timeframe of the Mission phases, i.e.: by 2025 for the ‘development and piloting’ phase and 2030 for the ‘deployment and upscaling phase’.

Sediments, a key component of river ecosystems, provide habitats to many aquatic organisms, regulate the morphology and shape of river basin and provide key ecosystem services. Pollutants can accumulate in sediments and, once displacements occur, disperse with them throughout the entire river basin. Human activities that affect natural river flow and continuity, such as flood protection measures, commercial sediment excavation, hydropower and navigation, alter sediment balance and transport within the river basin. Land-based activities such as agriculture, are also major drivers of alterations in sediment regime. This interference results in decreased sediment flow in free flowing river sections and in a sediment surplus in impounded sections increasing the risk of damage to infrastructure and human dwellings, besides reducing the effectiveness and raising maintenance costs. Also, sediment quality, in particular the degree of pollution levels, plays an important role in achieving good ecological status of river waters. Effective sediment management at a river basin scale requires trans-national, cross-sectoral and multidisciplinary approach. Moreover, sediment management accounts for the different demands on sediments; it considers relevant protection aspects and multiple uses of a river and its floodplain (also diverging use interests, conflicts).

In the Danube river basin, the ICPDR⁸⁵ underlines in the river management plans 2009, 2015 and 2021 the need to improve sediment management and river morphology to address an increasing discrepancy between surplus and lack of sediment, which increases flood risks, reduces navigation possibilities, impacts hydropower production and biodiversity⁸⁶. The 2021 river management plan recognises the sediment balance alteration as a significant management issue that requires urgent trans-national solutions.

The sediment flows in the Danube river basin were analysed in the ICPDR Danube Sediment Interreg project⁸⁷, which provided Danube Sediment management Guidance⁸⁸, whereas sediment quality monitoring was covered by the ICPDR ‘SIMONA’⁸⁹ projects. This knowledge and guidance should provide references for the design of effective management measures and their subsequent demonstration at a river basin scale.

⁸⁵ [ICPDR - International Commission for the Protection of the Danube River |](#)
⁸⁶ [2021 Updates to Danube River Basin & Flood Risk Management Plans Published | ICPDR - International Commission for the Protection of the Danube River](#)
⁸⁷ [Danube Sediment - PA 05 \(danube-region.eu\); Interreg Danube \(interreg-danube.eu\)](#)
⁸⁸ [ee566924f1764d4798dc7bb9b59537ce84d98101.pdf \(interreg-danube.eu\)](#)
⁸⁹ [Project SIMONA | \(bas.bg\)](#)

The proposals should focus on the demonstration of sustainable and effective solutions for sediment management at river basin scale, including solutions for restoration of sediment balance and flow in the Danube river-Black sea system and measures to improve sediment quality. The demonstration activities should entail a holistic approach to sediment management, involving all relevant actors at a transnational/national scale and across relevant sectors, such as ICPDR⁹⁰, relevant national authorities, riparian communities as well as concerned economic actors. These demonstration activities should appropriately combine sediment management measures focused on sediment flow quantity such as:

- measures to restore sediment transport and sediment flows;
- measures to reduce excessive erosion (e.g. change of sediment regime, increase of bed resistance, reduction of energy slope, nature based solutions, etc.);
- measures to address excessive sedimentation (e.g. change of sediment regime, route sediments, increase energy slope, increase bed shear stress, etc.),

with measures to improve sediment quality, such as pollution prevention and reduction. The measures should be adjusted to the needs of a specific river section, reservoir or embankment area and ensure a long-term sustainability of sediment flow, also improving the good ecological status and ecosystem services provided by key river ecosystems and habitats, including wetlands and protection of biodiversity. Nature based solutions and building with nature should be prioritised. Use of satellite-based remote sensing is encouraged to complement more traditional approaches on effectiveness assessment of the chosen measures and solutions.

Proposals must:

- Carry out demonstration activities in 3 different Member States and/or Associated Countries of the Danube river basin, involving and including in the consortium entities from these three countries. These demonstration activities should be selected on the basis of their relevance and impact at the river basin scale and based on the recommendations and results of the previously mentioned projects (ICPDR Danube Sediment Interreg project and SIMONA);
- Proposals should also identify areas and locations where the proposed solutions are replicable and draw up an action plan and roadmap needed for the replication and scale up of the solutions for sustainable and effective sediment management at a river basin scale.

The projects should include impact monitoring of the activities affecting sediment flow within the Danube river basin and into the Black sea, based on and in cooperation with the ICPDR sediments monitoring system set up through previous projects such as SIMONA and in cooperation with the national water/river management authorities concerned and relevant

⁹⁰ [ICPDR - International Commission for the Protection of the Danube River](https://www.icpdr.org/) |

European Research Infrastructures. In addition, the project will monitor the impacts and effectiveness of demonstration activities at a local scale.

To address the impact-driven approach of the Mission and the nature of Innovation Actions, proposals are expected to work with and engage at least 5 ‘associated regions’ to showcase the feasibility, replicability and scalability of the solutions developed within the projects in other areas. ‘Associated regions’ are understood as areas with ecosystems that can benefit from the demonstration activities (e.g. neighbouring regions and/or regions in a different sea basin) and/or less-developed regions, with the need to build capacity to implement the innovative solutions to improve management of sediments in a river basin. The proposals should ensure that the associated regions are located in Member States/Associated countries other than those that are part of the project consortium. The involvement of “associated regions” that have not yet participated in Mission projects is encouraged. The partners should proactively reach out to the ‘associated regions’ to enable them to follow closely the project and its demonstration activities. The projects should continuously share their outcomes and knowledge with those ‘associated regions’ and provide them with technical assistance to build capacity and to implement sustainable, balanced and effective sediment management at a river basin scale in their territory that contribute to achieving the Mission objectives. The technical assistance to the ‘associated regions’ should include the provision of technical advisory services necessary to the prepare roadmaps, plans and projects to restore sustainable and balanced sediment flow at a river basin scale by addressing possible barriers, improving sediment quality, implementing effective sediment monitoring systems at a river basin scale and showing the feasibility of implementing innovative solutions. Proposals should outline the selection process of the third parties to which financial support would be granted based on principles of transparency, objectivity and fairness, in accordance with part G of the general annexes to this work programme. The projects should support data and knowledge sharing through and as well benefit from the Ocean and Water Knowledge System to foster cross-regions, pan-European approaches.

The maximum amount of Financial Support to Third Parties is EUR 100,000 per ‘associated region’ for the entire duration of the action. Proposals should outline the selection process of the third parties to which financial support would be granted based on principles of transparency, objectivity and fairness.

The proposals are expected to integrate actions to support the social and economic transitions towards sustainable, inclusive and long term management of the restored and protected ecosystems, including natural, social, economic and cultural elements and business models for generating revenue from the restored and protected ecosystems and involve for that purpose local business communities, in particular SMEs, investors and other business stakeholders.

Training and communication activities addressing stakeholders, including regional and local authorities from the ‘associated regions’ should be included in each proposal. Local actors, including where appropriate, the European Volunteer Corps and Mission Citizen Assemblies, should be involved in the demonstration activities.

The proposal should consider actions to prevent and reduce pollution from different sources (such as chemicals and organic pollutants) affecting sediments with a view to improving their quality.

The proposals should also build on research and innovation developed in the current and previous EU framework programmes, such as but not limited to Horizon2020 and Horizon Europe (notably with projects selected under topics HORIZON-MISS-2021-OCEAN-01-02; HORIZON-MISS-2021-OCEAN-02-02 and HORIZON-MISS-2021-OCEAN-02-04) and the Strategic Research and Innovation Agenda for the Black Sea (SRIA), LIFE, Interreg projects (such as Danube Flood Plain⁹¹), and national and regional programmes in the Danube river basin (e.g. Interreg 2021-2027 / EU Macoregional Strategies) as well as the activities of Water4All Partnership and Sustainable Blue Economy Partnership and the Common Maritime Agenda for the Black Sea, in particular in the framework of sustainable sediment management. Additionally, projects should collaborate with projects funded under the topic HORIZON-INFRA-2022-EOSC-01-03 to adopt best practices regarding FAIR and open data sharing.

The projects funded under this topic should:

- build links with other Mission activities and other relevant activities within the lighthouse and its area to maximize synergies, as well as with the European Blue Parks, other Mission lighthouses and their activities;
- build links with the Mission implementation monitoring system that will be part of the Mission Implementation Support Platform and with the Danube river basin lighthouse support facility and platform, for reporting, monitoring and coordination of all relevant implementation activities in the lighthouse area as well as with the Blue Parks technical support platform;
- build links with the activities of the International Commission for the Protection of the Danube River in the area of sediment management, with the Danube sediment monitoring framework as well as with the national and regional authorities with competence in the area of river and water management;
- support the Ocean and water knowledge system, in particular by contributing to biodiversity monitoring, modelling and knowledge creation and data.

Proposals are expected to show how their activities and results will support the European Green Deal and the European Biodiversity Strategy⁹², in particular its target of 25,000 km of free flowing rivers and demonstrate how they will achieve the Mission's objectives, taking into account the timeframe of the Mission phases, i.e.: by 2025 for the 'development and piloting' phase and 2030 for the 'deployment and upscaling phase'.

⁹¹ [Interreg Danube \(interreg-danube.eu\)](https://interreg-danube.eu)

⁹² https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en

HORIZON-MISS-2023-OCEAN-01-03: Atlantic and Arctic sea basin lighthouse – Addressing climate change and human activities threats to marine biodiversity

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 16.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used). In addition to the standard eligibility conditions, the consortium must carry out demonstration activities in 3 different countries of the Atlantic and Arctic basin, involving and including partners from these respective countries in the consortium.
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 5-7 by the end of the project – see General Annex B.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The financial support to third parties may only be awarded to local and/or regional authorities from an ‘associated region’. The maximum amount to be granted to each “associated region” is EUR 100,000, to showcase the feasibility, replicability and scalability of the solutions developed within the project in the “associated region”⁹³. Each “associated region” may benefit from the Financial Support to Third Parties provided under this topic within the duration of the project only once. Beneficiaries will be subject to the following additional obligations

⁹³ ‘Associated regions’ are understood as areas with ecosystems that can benefit from the demonstration activities (e.g. neighbouring regions and/or regions in a different sea basin) and/or less-developed regions, with the view to build capacity to implement the innovative solutions to restore marine ecosystems. The proposals should ensure that the associated regions are located in Member States/Associated countries other than those that are part of the project consortium.

	regarding open science practices: If projects collect in-situ data and marine observations, beneficiaries must make them openly available through the European Marine Observation and Data network (EMODnet), based on FAIR (findable, accessible, interoperable, reusable) principles.
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Expected Outcome: Project results are expected to contribute to all of the following expected outcomes:

- Enhance the implementation of the Biodiversity Strategy 2030 and the EU Arctic policy;
- Technological, logistical, social and economic innovations to counteract marine biodiversity loss;
- Enhanced basin-scale cooperation in the Atlantic and Arctic, including through transition arrangements that create socially and economically sustainable propositions for local stakeholders;
- Enhanced implementation of the European Green Deal, the EU Adaptation Strategy⁹⁴, Marine Strategy framework Directive, the EU Bioeconomy Strategy as well as the Galway Statement, the Belém Statement, the OSPAR Convention⁹⁵ in connection with the implementation of EU marine environment, biodiversity and Arctic policies, the EU's International Ocean Governance Agenda, the Atlantic Action Plan 2.0 with the aim to work for the benefit of all communities of stakeholders around the Atlantic and the Arctic Action Plan enhancing collaborative efforts to address the challenges in the Arctic;
- Better informed citizens and decision makers, for a better governance.

Scope: Proposals under this topic are expected to show how their activities and results will achieve the Mission objective 1 - Protect and restore marine and freshwater ecosystems and biodiversity, in line with the timeframe of the Mission phases, i.e.: by 2025 for the 'development and piloting' phase and 2030 for the 'deployment and upscaling phase'.

Proposals will focus on developing and demonstrating ecosystem-based conservation measures and approaches for reducing cumulative pressure from human activities to address marine biodiversity loss at basin/regional level.

Proposals will contain a set of activities, but are not necessarily limited to, sustainable fishery management and practices, pollution reduction and sustainable shipping, prevention and control of invasive species, marine and nursery habitat preservation and protection, establishment of marine reserves, impacts of climate change. To safeguard biodiversity against climate change and build resilience, adaptive management approaches and nature-based measures are also expected to be considered as well as minimisation of cumulative

⁹⁴ COM/2021/82 final

⁹⁵ Convention for the Protection of the Marine Environment of the North-East Atlantic

impacts of other stressors. Activities for quantifying the impact of climate change (acidification, sea-level rise, deoxygenation, ocean warmings, primary production, phytoplankton and zooplankton, etc.) on ocean and coastal ecosystems and biodiversity will be important to understand the stressors. Proposals can include application of genomics methods for the characterization of the biodiversity status, as well as for the long-term biomonitoring of restorative interventions and ecosystem evolution.

Activities will be designed and carried out in partnership with local fishing communities and, where relevant, indigenous people as well as other relevant stakeholders (e.g.: shipping industry) to ensure that the tested solutions grant due consideration to their knowledge, expectations and needs.

Activities will also support evidence-based data and awareness raising on biodiversity conservation in relation to local/regional development and capacity building and will establish good practices for nature-friendly local/regional initiatives and inspire specific transnational cooperation with EU Macro-regional regions.

Citizen engagement is a pillar concept for the Mission. Proposals may involve coastal communities with important biodiversity hotspots, including islands and the EU Outermost Regions in the co-creation of measures that meet the Mission's aims while granting due consideration to local communities' needs and values. Proposals are expected to involve where appropriate European volunteer/solidarity corps and citizens science activities in the restoration efforts.

Proposals must

- Carry out demonstration activities in 3 different countries of the Atlantic and Arctic basin, involving and including in the consortium partners from these respective countries;
- Proposals should also identify areas and locations where the solutions are replicable and draw up an action plan and roadmap to replicate and scale up the ecosystem and biodiversity restoration solutions and actions.

To address the impact-driven approach of the Mission and the nature of Innovation Actions, proposals are expected to work with and engage at least 5 'associated regions' to showcase the feasibility, replicability and scalability of the solutions developed within the projects in other areas. 'Associated regions' are understood as areas with ecosystems that can benefit from the demonstration activities (e.g. neighbouring regions and/or regions in a different sea basin) and/or less-developed regions, with the need to build capacity to implement the innovative solutions to restore marine ecosystems and biodiversity. The proposals should ensure that the associated regions are located in Member States/Associated countries other than those that are part of the project consortium. The partners will proactively reach out to the associated regions to enable them to follow closely the project and its demonstration activities. The projects should continuously share their outcomes and knowledge with those 'associated regions' and provide them with technical assistance to build capacity and

solutions to address biodiversity loss and restore ecosystems in their territory, which will contribute to achieve the Mission objectives. The technical assistance to the 'associated regions' should include advice to prepare roadmaps, plans and projects to restore marine ecosystems and biodiversity in the associated regions, to address possible barriers and show the feasibility of implementing innovative solutions for socio-economic transition processes in an ecosystem based and circular economy perspective.

Proposals should outline the selection process of the third parties to which financial support would be granted based on principles of transparency, objectivity and fairness, in accordance with part G of the general annexes to this work programme.

The proposals should build on research and innovation developed in the frame of related projects in the current and previous EU framework programmes, such as Horizon 2020 (e.g. the ongoing projects and activities which are part of the All-Atlantic Ocean Research Alliance ⁹⁶ and projects selected under topics HORIZON-MISS-2021-OCEAN-01-02; HORIZON-MISS-2021-OCEAN-02-03 and HORIZON-MISS-2021-OCEAN-02-05), LIFE and national and regional programmes in the Atlantic/Arctic basins as well as the activities of the Sustainable Blue Economy Partnership and the Atlantic Action Plan 2.0. . Additionally, projects should collaborate with projects funded under the topic HORIZON-INFRA-2022-EOSC-01-03 to adopt best practices regarding FAIR and open data sharing. Projects may benefit from the expertise and knowledge of the Joint Research Centre, especially in the areas of large scale monitoring and assessment set-up, technical input on harmonised methodologies and making links with relevant policy frameworks.

The projects funded under this topic should address all following issues:

- build links with other Mission activities and other relevant activities within the lighthouse and its area to maximize synergies, as well as with the European Blue Parks, other Mission lighthouses;
- build links with the Mission implementation monitoring system that will be part of the Mission Implementation Support Platform and with the Atlantic and Arctic sea basin lighthouse support facility and platform, for reporting, monitoring and coordination of all relevant implementation activities in the lighthouse area as well as with the Blue Parks technical support platform;
- support the Ocean and water knowledge system, in particular by contributing to biodiversity monitoring, modelling and knowledge creation and data.

Projects funded under this topic are strongly encouraged to participate in networking and joint activities with other projects funded under other topics in the Mission Ocean, seas and waters as well as in other relevant Missions, as appropriate. These networking and joint activities could, for example, involve the participation in joint workshops, the exchange of knowledge, the development and adoption of best practices, or joint communication activities.

⁹⁶ <https://allatlanticocean.org/whoweare>

Proposals addressing the EU Outermost Regions are encouraged given these regions' natural assets.

Proposals are expected to show how their activities and results will achieve the Mission's objectives, in line with the timeframe of the Mission phases, i.e.: by 2025 for the 'development and piloting' phase and 2030 for the 'deployment and upscaling phase'.

HORIZON-MISS-2023-OCEAN-01-04: European natural lakes: demonstration of integrated approaches for protection and restoration of natural lake ecosystems and their biodiversity

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 4.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 12.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used). In addition to the standard eligibility conditions, the consortium must carry out demonstration activities in at least 3 different countries, involving and including partners from these three countries in the consortium.
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 5-7 by the end of the project – see General Annex B.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The financial support to third parties may only be awarded to local and/or regional authorities from an 'associated region'. The maximum amount to be granted to each "associated region" is EUR 100,000, to showcase the

	feasibility, replicability and scalability of the solutions developed within the project in the “associated region”⁹⁷. Each “associated region” may benefit from the Financial Support to Third Parties provided under this topic within the duration of the project only once. Beneficiaries will be subject to the following additional obligations regarding open science practices: If projects collect in-situ data and marine observations, beneficiaries must make them openly available through the European Marine Observation and Data network (EMODnet), based on FAIR (findable, accessible, interoperable, reusable) principles.
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Expected Outcome: Project results are expected to contribute to all of the following expected outcomes:

- Enhance the implementation of the European Green Deal, the EU Biodiversity Strategy, the EU Zero Pollution Action Plan, the EU Bioeconomy Strategy and the Water Framework Directive as well as other EU instruments and policies that concern freshwater ecosystems;
- Improved ecological and chemical status of European natural lakes;
- Demonstrated integrated and replicable approaches to protection and restoration of natural lake ecosystems, their biodiversity and healthy functioning, integrating all aspects of good ecological and chemical status of lakes under the Water Framework Directive;
- Demonstrated effective and replicable nature based solutions for restoration and protection of European lakes;
- Demonstrate improved solutions and systems for effective collaboration between, municipalities, regions and, if relevant, countries within a lake catchment area;
- Create opportunities for scaling up of solutions for protection and restoration of European lakes through involvement of ‘associated regions’.

Scope: Natural lakes are understood for the purposes of this Work Programme as natural inland bodies of standing surface freshwater or brackish water. There are more than 500 000 natural lakes larger than 1ha in Europe⁹⁸. There were over 2 800 lakes in the EU with bad or poor ecological status and over 8 000 lakes with moderate ecological status in 2018⁹⁹. The

⁹⁷ ‘Associated regions’ are understood as areas with ecosystems that can benefit from the demonstration activities (e.g. neighbouring regions and/or different regions) and/or less-developed regions, with the view to build capacity to implement the innovative solutions to restore freshwater ecosystems. The proposals should ensure that the associated regions are located in Member States/Associated countries other than those that are part of the project consortium.

⁹⁸ EEA: [Lakes — European Environment Agency \(europa.eu\)](https://www.eea.europa.eu/en/themes/water/lakes)

⁹⁹ (EEA, 2018 data) [Ecological status of surface water bodies — European Environment Agency \(europa.eu\)](https://www.eea.europa.eu/en/themes/water/lakes)

main pressures affecting the ecological status of European lakes are hydro-morphological pressures, pollution, in particular from chemicals and nutrient enrichment, water abstraction and climate change impacts. Nutrient enrichment results in algal blooms influencing the ecological status of these waters as well as their use for drinking and recreation.

Proposals under this topic are expected to show how their activities and results will achieve the Mission objective 1 - Protect and restore marine and freshwater ecosystems and biodiversity, in line with the timeframe of the Mission phases, i.e.: by 2025 for the 'development and piloting' phase and 2030 for the 'deployment and upscaling phase'.

The proposals should design and demonstrate integrated and replicable approaches to protect and restore natural lake ecosystems and their biodiversity that result in a significantly improved ecological and chemical status and maintain it in the long-term. The integrated approaches should cover physical and biochemical elements and address in an integrated way all main pressures on the lake ecosystem, (e.g.: water level regulation, water extraction, agriculture, aquaculture and navigation, main source of pollution, barriers to connectivity, pressures on biodiversity, including invasive alien species). Proposals should also consider threats and risks associated to climate change and pressures on biodiversity.

The demonstration activities should combine measures and solutions to reduce pressures and stressors, to restore and protect the lake ecosystem and its biodiversity, in particular using effective nature-based and circular-biobased solutions in the lakes, along shorelines and across their catchments to reduce use of chemicals and retain nutrients. The demonstration sites should be located on natural lakes with a surface area exceeding 1 km².

Proposals must:

- Carry out demonstration activities in at least 3 different countries, involving and including in the consortium partners from these three countries;
- Proposals should also identify areas and locations where the solutions are replicable and draw up an action plan and roadmap to replicate and scale up the solutions and actions for the protection and restoration of natural lakes.

To address the impact-driven approach of the Mission and the nature of Innovation Actions, proposals are expected to work with and engage at least 3 'associated regions' to showcase the feasibility, replicability and scalability of the solutions developed within the projects in other areas. 'Associated regions' are understood as areas with ecosystems that can benefit from the demonstration activities (e.g. in the context of this topic, regions with another natural lake located in EU Member States and/or Associated countries) and/or less-developed regions, with the need to build capacity to implement the innovative solutions to restore freshwater ecosystems. The proposals should ensure that the associated regions are located in Member States/Associated countries other than those that are part of the project consortium. The involvement of "associated regions" that have not yet participated in Mission projects is encouraged. The partners will proactively reach out to the associated regions to enable them to follow closely the project and its demonstration activities. The projects should continuously

share their outcomes and knowledge with those ‘associated regions’ and provide them with technical assistance to build capacity and to implement natural lake restoration and protection solutions in their territory to contribute to achieve the Mission objectives. The technical assistance to the ‘associated regions’ should include advice to the prepare roadmaps, plans and projects to restore and protect natural lakes, to address possible barriers and show the feasibility of implementing innovative solutions.

Proposals should outline the selection process of the third parties to which financial support would be granted based on principles of transparency, objectivity and fairness, in accordance with part G of the general annexes to this work programme.

The projects should support data and knowledge sharing through and as well benefit from the Ocean and Water Knowledge System to foster cross-regions, pan-European approaches. An European Digital Innovation Hub (EDIH) on Natural lakes – at interregional/transnational level - could be envisaged.

The proposals are expected to integrate actions within basins and across lake catchments that support social and economic transitions towards sustainable, inclusive and long-term management of the restored and protected ecosystems. These should include natural, social, economic and cultural elements and business models for generating revenue from the restored and protected ecosystems. For that purpose, demonstrations should involve local business communities, in particular SMEs, investors and other business stakeholders.

Training, upskilling and communication activities towards stakeholders, including regional and local authorities from the ‘associated regions’ should be included in each proposal. Local actors, including where appropriate, the European Volunteer Corps and Mission Citizen Assemblies, should be involved in ecosystem restoration and protection activities and any actions for social and economic transitions towards sustainable inclusive and long-term management of the restored ecosystems, using activities like citizen science to encourage involvement and stewardship of lakes and their catchments.

The projects funded under this topic should:

- build links with other Mission activities and other relevant activities within the Mission lighthouses to maximize synergies, as well as with the European Blue Parks, and other Mission activities;
- build links with the Mission implementation monitoring system that will be part of the Mission Implementation Support Platform and with the lighthouse support facilities, for reporting in different basins, monitoring and coordination of all relevant implementation activities in the lighthouse area as well as with the Blue Parks technical support platform;
- support the Ocean and water knowledge system, in particular by contributing to biodiversity monitoring, modelling and knowledge creation and data.

Applicants should consider to link with other actions funded under Horizon Europe and set aside resources to engage in cooperation and networking with projects funded under the EU Framework Programme, e. g: the MERCES project¹⁰⁰ that developed ecological tools and protocols for cost-effective marine habitat restoration; the EULAKES project¹⁰¹; the Espon project¹⁰², Horizon Europe Nord-Balt-Ecosafe, H2020 MERLIN¹⁰³ as well as ECOSTAT¹⁰⁴ and EuropaBON¹⁰⁵ activities. Additionally, projects should collaborate with projects funded under the topic HORIZON-INFRA-2022-EOSC-01-03 to adopt best practices regarding FAIR and open data sharing.

Proposals are expected to show how their activities and results will support the European Green Deal and how they will achieve the Mission's objectives, in line with the timeframe of the Mission phases, i.e.: by 2025 for the 'development and piloting' phase and 2030 for the 'deployment and upscaling phase'.

Objective 3 – Sustainable, carbon-neutral and circular Blue economy

Proposals are expected to show how their activities and results will achieve the Mission's objectives, in line with the timeframe of the Mission phases, i.e.: by 2025 for the 'development and piloting' phase and 2030 for the 'deployment and upscaling phase'.

Proposals are invited against the following topic(s):

HORIZON-MISS-2023-OCEAN-01-05: Lighthouse in the Baltic and the North Sea basins - Lighthouse in the Baltic and the North Sea basins - Green and energy-efficient small-scale fishing fleets

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 4.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 12.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of

¹⁰⁰ <http://www.merces-project.eu/>

¹⁰¹ <https://keep.eu/projects/5508/European-Lakes-Under-Environ-EN/>

¹⁰² <https://www.espon.eu/large-lake-regions-hotspots-innovative-governance-europe>

¹⁰³ <https://project-merlin.eu/>

¹⁰⁴ <https://cordis.europa.eu/project/id/IST-2000-26189>

¹⁰⁵ <https://europabon.org/>

	Copernicus and/or Galileo/EGNOS (other data and services may additionally be used). In addition to the standard eligibility conditions, the consortium must carry out demonstration activities in 3 different countries of the Baltic and North Sea basin, involving and including partners from these respective countries in the consortium.
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 4-6 by the end of the project – see General Annex B.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Beneficiaries will be subject to the following additional obligations regarding open science practices: If projects collect in-situ data and marine observations, beneficiaries must make them openly available through the European Marine Observation and Data network (EMODnet), based on FAIR (findable, accessible, interoperable, reusable) principles.

Expected Outcome: Project results are expected to contribute to all of the following expected outcomes:

- Enhanced implementation of the European Green deal objectives and the EU Biodiversity Strategy for 2030;
- Improved understanding of technical, social, legal, regulatory and policy barriers to small-scale fisheries decarbonisation;
- Reduced fuel consumption and emissions from small-scale fishing vessels and improved energy efficiency in their range of activities, including acoustic noise reduction;
- Accelerated transition to fleets of small-scale fisheries equipped with greener and energy-efficient technologies to reduce emissions and fuel consumption;
- Increased users' choices and responsible user behaviours;
- Improved monitoring and understanding on the impact of greener and more efficient small-scale fishing fleets on the marine environment and marine biodiversity.

Scope: Proposals under this topic are expected to show how their activities and results will achieve the Mission objective 3 – Sustainable, carbon-neutral and circular blue economy, in line with the timeframe of the Mission phases, i.e.: by 2025 for the 'development and piloting' phase and 2030 for the 'deployment and upscaling phase'.

Proposals will address the complex dynamic of energy consumption and energy efficiency of small-scale fishing vessel fleets and in their range of activities. Under this topic, small-scale

fisheries is defined as “fishing carried out by fishing vessels of an overall length of less than 12 m and not using towed fishing gear”.

Proposals under this topic are expected to identify a set of suitable innovative and sustainable solutions, technologies, practices and processes to be tested, validated and demonstrated in real conditions to reduce emissions and fuel consumption of small-scale fishing vessels (length of less than 12 m), to increase energy efficiency in their range of activities and comply with EU regulatory frameworks. Solutions should consider multi-disciplinary approaches and guarantee full integration in the vessels. The integrated solutions need to be tested at sea to ensure fitness for purpose in harsh marine environment and for all range of fishing-related activities. Innovative solutions such as battery/hybrid systems, wind-propulsion vessels as well as use of sensors, predictive analytics, data, etc. can be considered.

Impact assessment on the marine environment and its biodiversity should also be carried out as well as an analysis of the obstacles, opportunities and recommendations about good practices for reducing fuel consumption and emissions from small-scale fishing vessels and improving energy efficiency in their range of activities.

Close cooperation between the fishing community, researchers and other stakeholders as well as with environmental organisations, NGOs, national and international authorities is a crucial requirement to ensure that solutions and technologies are suitable for and acceptable by the end-users, economically viable for (often) very small fishing enterprises.

Where appropriate activities may take into account synergies with other actions aimed to reduce waterborne transport emissions, for example projects arising from Horizon Europe calls; HORIZON-CL5-2021-D5-01, HORIZON-CL5-2022-D5-01, HORIZON-CL5-2023-D5-3, HORIZON-CL5-2024-D5-3 as well as with the activities carried out under the Zero Emission Waterborne Transport Partnership (ZEWT) and the Sustainable Blue Economy Partnership (SBEP). If projects collect in-situ data and marine observations, projects should collaborate with projects funded under the topic HORIZON-INFRA-2022-EOSC-01-03 to adopt best practices regarding FAIR and open data sharing.

The projects funded under this topic should:

- build links with other Mission activities and other relevant activities within the Mission lighthouses to maximize synergies, and with other Mission activities;
- build links with the Mission implementation monitoring system that will be part of the Mission Implementation Support Platform and with the lighthouse support facilities, for reporting in different basins, monitoring and coordination of all relevant implementation activities in the lighthouse area;
- support the Ocean and water knowledge system, in particular by contributing to biodiversity monitoring, modelling and knowledge creation and data.

SMEs, early-stage business and scale-ups involved in Mission projects entailing innovative, scalable and sustainable business ventures from traditional and emerging blue economy sectors are invited to join the BlueInvest community and benefit from the BlueInvest Fund¹⁰⁶.

HORIZON-MISS-2023-OCEAN-01-06: Cross-basin topic - Innovative nature-inclusive concepts to reconcile offshore renewables with ocean protection

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 2.25 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 4.50 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 3-4 by the end of the project – see General Annex B.

Expected Outcome: Project results are expected to contribute to the following expected outcomes:

- Enhanced implementation of the EU Sustainable Blue Economy Strategy and the achievement of EU Green Deal objectives and the Paris Agreement targets;
- Development of standards for nature-inclusive design in the offshore renewables sector;
- New approaches for the design of environmental-friendly offshore platforms;
- Solutions to meet renewable energy targets and the protection/restoration targets of the EU biodiversity strategy.

Scope: The EU offshore renewable energy strategy sets ambitious objectives for renewable energy production at sea, namely in relation to the RePower Europe Communication¹⁰⁷. These

¹⁰⁶ BlueInvest provides equity from the European Maritime, Aquaculture and Fisheries Fund, matching guarantees from InvestEU, capital from the European Invest Fund and its parent the European Investment Bank to venture capital or impact funds who will crowd in other investments. See: <https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1451>

objectives are particularly relevant to quickly move away from our dependency on fossil fuels. Deployment of renewable energy solutions needs to be fast and coherent with the EU biodiversity protection and restoration targets. Offshore renewable infrastructures need to be built in such a way that they do not significantly harm the marine environment (e.g.: facilitating the expansion of invasive species) and even, where possible, contribute to restore marine ecosystems. Offshore infrastructures can already have positive impacts on the surrounding biodiversity and act as reefs and refuges for certain species. Nature-inclusive designs might further decrease the negative impacts and enhance desired effects. So far, efforts on design have focused mostly on scour and cable protection in the offshore wind sector. They are limited to few small scale pilot projects and a few species (cod, flat oysters, etc.), that have shown positive impacts on marine ecosystems and concentrate on the seabed close to offshore wind turbines.

Considering the expected expansion of offshore renewables, there is room for the development of innovative concepts to reduce impact of offshore activities and protect the ocean.

Proposals under this topic are expected to show how their activities and results will achieve the Mission objective 3 – Sustainable, carbon-neutral and circular blue economy, in line with the timeframe of the Mission phases, i.e.: by 2025 for the ‘development and piloting’ phase and 2030 for the ‘deployment and upscaling phase’.

Proposals should focus on truly multidisciplinary approaches for the development of nature-inclusive concept design of offshore renewable energy devices. Proposals should address novel concepts, technologies and solutions beyond the state-of-the-art, taking a life-cycle perspective, thus addressing aspects relating to planning, installation, maintenance and end-of-life issues. Proposals should identify and assess already existing approaches and concepts and highlight the benefits and feasibility of novel solutions.

Nature-inclusive concepts will address the design and choice of materials for the mooring foundations and for the offshore devices, either fixed or floating, noise issues, and laying cables, and show potential positive effects for biodiversity and the marine ecosystems. Multiple-use concepts could also be considered if relevant. Other ocean energy technologies beyond wind energy relying on wave, marine floating photovoltaics and tidal stream, for example, may also be considered.

Recommendations relating to long-term monitoring regimes of the impacts are also expected. Proposals should include biodiversity and ecosystem impact and risk assessments, (also in relation to risks of propagating invasive species).

The activities are also expected to contribute to the development of environmental standards in the field and of good practices for decision-making, planning processes and future

¹⁰⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483>

investments. Main industry actors, such as those involved in the European Strategic Energy Technology Plan (SET Plan)¹⁰⁸ should be involved.

The projects funded under this topic should:

- build links with other Mission activities and other relevant activities within the Mission lighthouses to maximize synergies, and with other Mission activities as well as with relevant EU Partnerships like Clean Energy Transition (CET) or Sustainable Blue Economy (SBEP);
- build links with the Mission implementation monitoring system that will be part of the Mission Implementation Support Platform and with the lighthouse support facilities, for reporting in different basins, monitoring and coordination of all relevant implementation activities in the lighthouse area;
- support the Ocean and water knowledge system, in particular by contributing to biodiversity monitoring, modelling and knowledge creation and data.

HORIZON-MISS-2023-OCEAN-01-07: Cross-basin topic - Analysis of the obstacles and opportunities for repurposing aged/unused offshore infrastructures

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 1.40 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 1.40 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 4-5 by the end of the project – see General Annex B.

Expected Outcome: Project results are expected to contribute to all of the following expected outcomes:

- Solutions to support marine restoration;

¹⁰⁸ https://energy.ec.europa.eu/strategic-energy-technology-plan-0_en

- Insights in view of sustainable business models;
- Options for repurposing aged/unused offshore platforms and enhance the circular economy transition.

Scope: The increasing number of offshore infrastructures to be decommissioned in the near future in the European seas requires a sound assessment of environmental, social and technical impacts that decommissioning processes carry. Alternatives to decommissioning can be viewed as an opportunity to preserve the marine habitats around these platforms and to convert these infrastructures to other potentially valuable uses with environmental, economic and/or scientific benefits.

Proposals under this topic are expected to show how their activities and results will achieve the Mission objective 3 – Sustainable, carbon-neutral and circular blue economy, in line with the timeframe of the Mission phases, i.e.: by 2025 for the ‘development and piloting’ phase and 2030 for the ‘deployment and upscaling phase’.

Decisions taken in the coming years will determine whether offshore infrastructures become an environmental liability or an opportunity for preserving marine ecosystems, minimising risks and promoting innovation.

There are several options available to dispose of offshore infrastructures, including complete removal and re-processing of the materials, partial removal or dismantling the structure and placing the materials on the seabed, reuse and re-purposing of the infrastructure for e.g. scientific and ocean monitoring purposes, economic, or recreational activities.

Proposals under this topic should focus on analysing options to decommissioning offshore platforms, in light of marine conservation and ecosystem protection, identifying possible business models and assessing related implications for policy/decision making and for public acceptance. This analysis should complement the outcomes of the Study on “Decommissioning of offshore oil and gas installations: a technical, legal and political analysis¹⁰⁹” and will address all following issues:

Proposals should address all following issues:

1. Carry out a review of existing experiences, strategies and programmes for alternatives to offshore platforms decommissioning;
2. Design a framework for cost-benefit analysis of potential options to decommissioning of offshore platforms, including a risk/benefit analysis of these potential options on marine ecosystems and biodiversity;
3. Examine related legal, regulatory and policy issues;

¹⁰⁹ <https://op.europa.eu/en/publication-detail/-/publication/7d7d51a5-8d44-11ec-8c40-01aa75cd71a1/language-en>

4. Carry out informed discussions among major stakeholders, environmental organisations and NGOs, owners and operators, national and regional public authorities (including Regional Sea Conventions) and agencies for defining actions to address obstacles and opportunities for repurposing aged/unused offshore platforms and identify at least 3 promising sites for future demonstration activities;
5. Assess the socio-economic benefits including job creation of decommissioning versus repurposing.

Mission Enabling activities: Digital Ocean and Water Knowledge System, public mobilisation and engagement, dynamic investment ecosystem

Proposals are expected to show how their activities and results will achieve the Mission's objectives, in line with the timeframe of the Mission phases, i.e.: by 2025 for the 'development and piloting' phase and 2030 for the 'deployment and upscaling phase'.

Proposals are invited against the following topic(s):

HORIZON-MISS-2023-OCEAN-01-08: Integration of socio-ecological models into the Digital Twin Ocean

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 3.30 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 10.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 3-5 by the end of the project – see General Annex B.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Grants awarded under this topic will be linked to the following action(s): HORIZON-MISS-2021-OCEAN-05-01: Underlying models for the

	European Digital Twin Ocean HORIZON-MISS-2021-OCEAN-IBA-01 EU Public Infrastructure for the European Digital Twin Ocean HORIZON-MISS-2022-OCEAN-01-07: Integration of biodiversity monitoring data into the Digital Twin.
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Expected Outcome: Expected outcomes should complement the capacities and uses of the European Digital Twin Ocean (EU DTO) by:

- Solutions to the challenges of marine social-ecological modelling in a manner that will allow for their seamless incorporation in the framework of the Digital Twin Ocean, taking into consideration their complex nature. Marine social-ecological models aim to integrate modelling approaches originating from different disciplines, focusing on different levels of analysis and implementing different methodological frameworks in a meaningful way. The challenges include interoperability of transdisciplinary data (ecological, social, economic, legal, etc.); integration of models with different spatial and temporal resolutions, calculation of uncertainties and more.
- Social-ecological models, developed with a multi-actor approach, that would help assess the impacts of environmental changes, human pressures and/or policy implementation on the overall ocean health, blue economy and societal prosperity;
- Improved understanding of complex social-ecological systems, aiming in better management of human activities, responding to societal needs (local communities, economic activities, growing resources needs, ...), avoiding negative outcomes of policies such as the loss of jobs, overfishing, hypoxia, or stock collapse.

Scope: The vision for the European Digital Twin Ocean is to make ocean knowledge readily available to citizens, entrepreneurs, scientists and policy-makers and to provide them with an innovative set of user-driven and interactive tools, fostered by digital transition, empowering them to collectively share the responsibility of marine and coastal habitats and act on their restoration, to support a sustainable blue economy and to mitigate and adapt to climate change. It aims to provide consistent high-resolution, multi-dimensional description of the ocean: its physical, chemical, biological and social-ecological and economical dimensions, with forecasting periods from season to multi-decades, transforming data into knowledge. This call aims to support the necessary actions and tool developments to appropriately include the social-ecological component of the European Digital Twin Ocean, including the links and interactions with other parts of the system (data, underlying models, ecosystem models, local twins, etc.), the necessary social-economic data considerations and the development of models and other applications to simulate the social and economic part of marine and coastal systems linked to the environmental/ecological components, enabling the development of normative (what-if scenarios) and decision-support tools.

Proposals should address all activities and tasks as described below, in cooperation and complementarity with the linked actions and other relevant actions:

- Address the long-term and reliable accessibility and availability of spatially explicit social and economic data, fit-for-purpose for the development of social-ecological models and other relevant approaches as described below. The social and economic data should be integrated with the available marine data sources and models of the DTO in an interoperable and standardised manner. This should include considerations related to spatial and temporal scale of analysis and data collection, development of methodological protocols to connect socio-economic data with environmental data, etc.
- Development of a wide range of social-ecological models, tools and applications, from simple impact assessment models, to agent-based models, to integrated social-ecological models, with capacity to run and assess a variety of normative (what-if) scenarios, evaluating the impact and long-term effect of environmental change, policy alternatives and management decisions to coastal and marine systems, both environmentally and societally.
- Assessment of existing or development of new parallel frameworks of analysis, other than models to be integrated into the framework of the DTO. As not all aspects of socio-economic systems and behaviours can be assessed through numerical models, other methodologies should be investigated and developed, to ensure inclusion of these parts of the system into the DTO and link them appropriately with the social-ecological models.
- Development of integrated ecological and socio-economic indicators that can be used in the assessment of the impacts of environmental, policy or management change in coastal and marine social-ecological systems.
- Development of new processes and tools for decision-support, participatory management and policy scenarios assessment, including the methodological approaches to effective stakeholders' engagement.

Proposals should address considerations of social-ecological modelling in the overall framework of the European Digital Twin Ocean, but also develop applications appropriate for use in local Twins.

Proposals should support the Mission's Blue Parks and Mission lighthouses and efficient ocean stewardship. Projects should collaborate with projects funded under the topic HORIZON-INFRA-2022-EOSC-01-03 to adopt best practices regarding FAIR and open data sharing.

HORIZON-MISS-2023-OCEAN-01-09: Roadmap towards the integration of inland waters into the Digital Twin Ocean

Specific conditions

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<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 2.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 2.00 million.
<i>Type of Action</i>	Coordination and Support Actions
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Grants awarded under this topic will be linked to the following action(s): HORIZON-MISS-2021-OCEAN-05-01: Underlying models for the European Digital Twin Ocean HORIZON-MISS-2021-OCEAN-IBA-01 EU Public Infrastructure for the European Digital Twin Ocean HORIZON-INFRA-2022-EOSC-01-03: FAIR and open data sharing in support of healthy oceans, seas, coastal and inland waters HORIZON-MISS-2022-OCEAN-01-07: Integration of biodiversity monitoring data into the Digital Twin HORIZON-CL6-2023-GOVERNANCE-01-11: Reducing observation gaps in the land-sea interface area

Expected Outcome: The Digital Twin Ocean is the first digital component developed to propose a Mission knowledge system supporting the objectives of the Mission “protect our oceans and waters” and supporting the implementation of Mission lighthouses.

The Digital Twin ocean will host a digital infrastructure with data services to facilitate data analytics, advanced modeling and high performance computing, development of what if scenarios to assess policies development in a context of resilience to climate change and sustainable development, supporting as well the implementation of local twins addressing specifics requested by stakeholders at all relevant scales from global to local.

The DTO architecture is meant to become scalable and flexible to offer the opportunity to develop an integrative approach to all-waters management from inland waters to oceans and vice versa, considering the whole as the hydrosphere.

Projects results are expected to contribute to all the following expected outcomes:

- Inventory and prioritization of EU/cross-boundary or international policies (WFD but not only) and topics to be addressed by the knowledge system to increase and share

knowledge on inland waters (lakes, rivers, reservoirs, wetlands, snow, ice etc. excluding coastal and seas)

- Inventory of what is relevant from the national meteorological services duties including for climatology, and principles of interfacing with them
- Inventory of current actions, projects and programs (including research projects, Research infrastructures, European Research Infrastructure Consortia – ERICs, cross-boundary programs) ongoing to get access to, to further develop a digital integrated inland water monitoring (from observations to forecasting or projections) that goes beyond the duties of the national meteorological services
- Inventory of current European digital systems of interest to build a digital twin for inland waters:
 - Actions and systems related to inland water observations and inland water data spaces (on land and including the land/sea interface at the shore) including environmental sensing as well as socio-economic data or data crowd sourced
 - Modelling and data analytics capacities (including environmental representation, human activities, socio-economic dimension, from river catchment monitoring and management to flood and drought monitoring and forecasting) which are complementary to meteorological services and the Digital Twin on Extreme events
- Digital service portfolio relevant for a digital twin on inland waters in terms of content (data, models, data analytics tools) and in terms of digital environment based on existing assets mature enough and state-of-the-art for a leading edge digital twin of inland waters
- Roadmap for the integration of relevant existing assets and development of necessary digital functionalities for a digital twin for inland waters, interoperable with the Digital Twin Ocean to ensure the consistency and continuity of water management, interoperable and avoiding duplication of inland water functionalities already available in existing twins of Destination Earth and EU data spaces initiatives
- Architectural concept, interfaces and standards to make data, models and technologies interoperable and integrable with the Digital Twin Ocean to propose a single digital environment for the Mission knowledge system and lighthouses.

Scope: The objective of the CSA is to prepare the development of the inland waters part (rivers, lakes, reservoirs, wetlands, snow and ice etc.) of the Mission Knowledge system, and address activities to be developed to make it integrated or interoperable with the Digital Twin Ocean for a unified Digital twin of Ocean and waters (addressing the hydrosphere as a whole) for the Mission and the lighthouses.

This should address the various facets of freshwater systems from static knowledge to dynamic monitoring of runoffs, hydrology, hydrodynamics, biogeochemistry to biology,

interactions with soils and seas, for climate purposes, water management or natural disasters (e.g. flood, drought) etc.

Different scales shall be addressed from catchment to global perspective of the water cycle.

The targeted inland water digital twin shall support the implementation of the Mission through its different lighthouses and specially supporting the one dedicated to Danube.

The project should address the following:

Inventory

1. Make the inventory of EU and international policies relevant to inland waters that call for monitoring, forecast, projection or simulation of the inland water cycle in all its component : physical state, chemistry, geology, biology, both static and dynamic
2. Liaise with relevant stakeholders: researchers, industry (specially water industry operators), users (lie river basin agencies, water agencies) etc. to inventory their requirements for better policy implementation and planning in a context of climate change, considering specially the relevant lighthouses
3. Make the inventory of data sources and sensing capacities (environmental but as well socio-economic or citizen) available or required to support the twinning
4. Make the inventory of past or ongoing research projects, information systems and technical or operational programs (e.g. Copernicus, Wise) dealing with inland water monitoring and management and able to provide the basis for future digital services in terms of content, product, softwares (models, data analytics), tools or infrastructures (digital or sensors)
5. Liaise with the national meteorological services and with the digital twins in place in DestinationEarth to scope precisely the contribution of a twin on inland waters avoiding duplication and preparing as well interfaces with these external systems to be able to propose a integrative approach to inland water monitoring and management

Critical analysis and preliminary design

Based on the outcomes of above tasks:

1. Define a set of reference of uses cases for a future digital twin development and set of requirements
2. Conduct a critical analysis of current technical achievements to propose a state of the art content for a inland water digital twin (products, digital services, data analytics and digital tools including models), liaising with lighthouses, stakeholders to eventually define priorities of implementation
3. Define recommendations for a functional and system digital architecture (which data space, digital tools, digital backbone for computing and data management, APIs with

external infrastructures, which reference R&D and infrastructures to consider integrating) that:

- can be integrated or at least interoperable with the Digital Twin Ocean (linked action with HORIZON-MISS-2021-OCEAN-IBA-01 EU Public Infrastructure for the European Digital Twin Ocean)
- is compatible and interoperable with the DestinationEarth initiative specially with the two first twins that can include a hydrological component for climate and for extreme events) and with the digital platform
- enable the development of a mature, high-quality, scientifically state-of-art and pre-operation digital twin component for inland waters

Roadmap

1. Based on the recommendations defined above and inventory made, develop a roadmap for the implementation of the Digital Twin for Inland waters including:
 - A preliminary work breakdown with priorities of implementation into a stepped approach specially since the content could be too complex from the physics to chemistry or biology
 - A list of reference technical developments, data sources and existing programs/projects on which to build
 - A list of reference use cases on which to build first with identified stakeholders, contributing preferably to the Danube lighthouse
 - A tentative schedule, cost estimate and risk analysis
 - Interfaces to be considered and set up to ensure the effective interoperability with external and ongoing developments like DTO, DestinE, ERICs
 - A tentative technical governance to liaise with EU programs and with National meteorological services to foster a inclusive and integrative approach to the management of inland waters in a context of climate change and sustainable development

Projects should collaborate with projects funded under the topic HORIZON-INFRA-2022-EOSC-01-03 to adopt best practices regarding FAIR and open data sharing.

HORIZON-MISS-2023-OCEAN-01-10: Choose your fish: a campaign for responsible consumption of products from the sea

Specific conditions	
<i>Expected EU contribution per</i>	The Commission estimates that an EU contribution of around EUR 2.00 million would allow these outcomes to be addressed appropriately.

<i>project</i>	Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 2.00 million.
<i>Type of Action</i>	Coordination and Support Actions

Expected Outcome: Project results are expected to contribute to all of the following expected outcomes:

- Accessible and engaging media product to offer information on seafood and aquaculture consumption choices; to ensure a higher outreach, such product must be offered in all EU official languages, and take into account fisheries and aquaculture specificities of all EU sea basins and inland waters;
- More informed seafood and aquaculture products purchase choices by European citizens;
- Encourage sustainability of consumption patterns, including on reducing food waste and carbon footprint, and in consideration of future viability of stocks;
- Support knowledge and consumption of local and seasonal seafood and aquaculture products;
- Create an awareness campaign, including communication products for e.g. Social Media, to promote the media product and support the objectives as from the above mentioned expected outcomes.

Scope: Consumers can play a key role in realising the vision of “living well within the limits of our planet”, and can drive sustainable and responsible patterns, including the responsible consumption of seafood and aquaculture products.

Selected proposal should help citizens to make responsible choices in relation to the seasonality of fishes and to fish population decline and, when relevant, to the sustainability of fishing techniques. The campaign should be performed by using the most effective and creative media, tools and types of initiatives to ensure a broad outreach targeting different segments of consumers, including children.

Activities under this topic should also increase awareness and encourage consumption and purchase of seasonal and local seafood and aquaculture products, as well as awareness on health benefits and nutritional value of aquatic food. These activities should also increase awareness on the benefits to the planet from consuming sustainable seafood products (including under organic farming) as well as in relation to the lower relative carbon footprint of aquatic food.

Activities should have a broad geographical coverage in all Member States and Associated Countries. To take in due account local/regional specificities, activities should be co-designed

and co-implemented with seafood retailers, consumer associations, producers and SMEs to motivate them to support informed choices of consumers.

Links with the “Taste the Ocean” initiative as well as with other international, national or local initiatives are encouraged in order to maximise the impact on more sustainable seafood and aquaculture products choices.

HORIZON-MISS-2023-OCEAN-01-11: Ocean & water and arts: the contribution of creative sectors to Mission Ocean and waters

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 2.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 2.00 million.
<i>Type of Action</i>	Coordination and Support Actions
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The financial support to third parties may only be awarded to entities implementing the arts and creative sector projects. The maximum amount to be granted to each entity is EUR 50,000. Each entity shall benefit from the Financial Support to Third Parties provided under this topic within the duration of the project only once.

Expected Outcome: Projects results are expected to contribute to all of the following expected outcomes:

- Stimulate the citizens’ interest in and fascination by ocean and waters;
- Boost interest in working in the blue economies, engaging in ocean and water management and protection and blue research and innovation;
- An increase of citizen and stakeholder awareness about the challenges and pressures faced by the ocean and inland waters -such as habitat and biodiversity loss, pollution (litter and plastic, chemicals, excess nutrients, light and underwater noise), invasive species, excessive human exploitation as well as climate change impacts-, and mobilisation of citizens and stakeholders for the protection and restoration of ocean, seas, coastal areas as well as inland waters;

- Mobilisation of artistic communities (e.g. visual arts, literary arts, performing arts, architects) and creative sectors (e.g., entities and associations operating in cultural, artistic, educational fields) for the protection and restoration of ocean, seas and inland waters and their biodiversity and for and empowerment of these communities and citizens to act against pollution and destruction of marine and freshwater ecosystems;
- Connect coastal and maritime communities with their habitats and their ecological, aesthetic and cultural heritage;

Scope: Art and creative sectors can play an important role in the mobilisation of citizens, stakeholders and civil society actors, such as NGOs and the philanthropic community, for the protection and restoration of the ocean and inland waters, their biodiversity, aesthetic and cultural heritage. Creative activities can also play an important role in addressing the challenges of coastal areas, thus contributing to the New Bauhaus initiative¹¹⁰. In this context, this action should bring together citizens, museums, aquaria, research institutions, engineers, architects, the civil society and citizens with artists and other creative sectors to foster interdisciplinary experimentation and entrepreneurship. Such undertakings should benefit from close cooperation with the scientific community and the philanthropists.

Mobilisation, cooperation and coordination should be envisaged at interregional/transnational level. Proposals are encouraged to build synergies with relevant activities supported under the Creative Europe programme¹¹¹ and with other New European Bauhaus projects, notably those based in coastal and maritime regions.

Proposals should include at least three calls for the selection of art and creative sectors projects, which will be supported through Financial Support to Third Parties under this topic. The entities implementing the arts and creative sector projects, shall be the recipient of the financial support, which should be used exclusively for the implementation of the project.

The selection process for these projects will be based on principles of transparency, fairness and objectivity, in accordance with part G of the general annexes to this work programme.

Proposals should ensure:

- among the assessment criteria, a high degree of circularity, carbon neutrality and positive environmental impact of the project;
- high visibility of the projects selected for funding, among others by publicising their results at the dedicated Mission website at europa.eu;
- promotional actions to highlight the contribution of artists and creative sectors' projects to achieving the Mission objectives through dissemination campaigns.

The artistic and creative sector projects that will benefit from the financial support to third parties under this topic should cover all the following elements:

¹¹⁰ https://europa.eu/new-european-bauhaus/about/about-initiative_en
¹¹¹ [Creative Europe | Culture and Creativity \(europa.eu\)](https://europa.eu/creative-europe/culture-and-creativity_en)

- Creative and novel artistic expressions that unlock and strengthen the connection of the wider public with ocean, seas, inland waters and their biodiversity;
- Synergies with scientific domains and involve scientific and research actors, as well as engage with civil society actors;
- Expected impact of the projects, expected number of people involved (directly in the project, and of potential reach out), and themes directly related to Mission objectives;
- Strong and innovative ocean and water literacy activities aimed at the general public designed with the participation of the relevant scientific and research communities, as well as civil society actors;
- Full sustainability and circularity of the entire project, including the use of sustainable materials and circular solutions and renewable energy;
- Commitment to a Climate Pact Pledge¹¹² leading to full decarbonisation or at least carbon neutrality of the project and of all the proposed activities;
- Commitment to the Make Europe Blue Campaign¹¹³;

Proposals submitted under this topic should:

- build links with other Mission activities and other relevant activities within the Mission lighthouses' areas and Blue Parks to maximize synergies;
- contribute to the aims and work pursued under the EU4Ocean Coalition and the new Bauhaus initiative;
- build links with the Mission implementation monitoring system that will be part of the Mission Implementation Support Platform and with the basin lighthouse support facilities and platforms, for reporting, monitoring and coordination of all relevant implementation activities in the lighthouses' areas.

¹¹² See [Pledges \(europa.eu\)](https://pledges.europa.eu/)

¹¹³ <https://webgate.ec.europa.eu/maritimeforum/en/node/5914>

Mission: 100 Climate-Neutral and Smart Cities by 2030

The Work Programme 2023 of the Climate-Neutral and Smart Cities Mission, in line with the provisions under the [Implementation Plan](#) of the Cities Mission, fosters the implementation of the Mission through actions that will continue to provide a strong and direct support to cities that will commit to climate neutrality and enable them to roll out their climate action plans and achieve climate neutrality by 2030, in synergy with significant progress towards zero pollution. In turn, the cities benefitting from these actions will act as experimentation and innovation hubs for other cities to become climate-neutral by 2050.

Climate neutrality for cities is associated with important co-benefits and urban qualities such as reduced air and noise pollution, improved health and well-being, reduced urban environmental footprints, enhanced urban greening and improved water management. It is also associated with policy coherence across sectors and with participatory and inclusive decision-making. Therefore, in addition to a significant contribution to the objective of the [European Green Deal](#) to make Europe climate-neutral by 2050, the actions funded will also contribute to the [UN Agenda 2030](#), the [EU Zero Pollution Action Plan](#), the [Fit for 55 strategy](#), the [Biodiversity Strategy for 2030](#), the [EU Strategy on adaptation to climate change](#), the [EU Industrial Strategy](#), the [EU Bioeconomy Strategy](#) and the [New European Bauhaus initiative](#). In the process, they will support cities in their twin green and digital transformation.

Topics under the 2023 calls will continue to work on developing and scaling up R&I activities and solutions while fostering synergies and joint actions with Horizon Europe Partnerships as well as other EU Missions. The envisaged actions will aim at:

- accelerating the transition of European cities to climate neutrality by exploiting the potential of electric, automated and connected as well as shared people mobility and freight transport through a joint action with the Horizon Europe Partnerships dedicated to Zero-emission Road Transport (2Zero) and Connected, Cooperative and Automated Mobility (CCAM);
- engage cities in decisive climate mitigation and adaptation efforts to reduce emissions, based on innovative use of urban greening and nature-based solutions through a joint action with the Adaptation to Climate Change Mission;
- develop and test a digital twin of a Positive clean Energy District (PED) covering modelling, management, citizen interaction, self-optimization, decision support/scenario analysis.

The operational capacity of the Mission Platform established through a Framework Partnership Agreement (HORIZON-MISS-2021-CIT-02-03) will be strengthened in order to: 1) ensure support to all the cities selected through the Call for Expression of Interest to be part of the Mission¹¹⁴, as well as to 2) provide support and basic services to all those cities that participated in the call and showed ambition and commitment to achieve climate-neutrality by

¹¹⁴ https://ec.europa.eu/info/files/eu-cities-mission-meet-cities_en

2030 but were not included in the final list of selected cities as well as cities responding to the second objective of the Mission.

Support for financial advisory services to be provided to help cities develop and eventually implement their investment strategy for becoming climate-neutral will also be addressed under this Work Programme.

Proposals should demonstrate, as appropriate to their scope and size, how they internalise the principles of the Cities Mission, notably: (1) the contribution of the action to an overarching strategy aiming at climate neutrality for cities, (2) the place of the action within a holistic and cross-sectoral approach to climate neutrality, and (3) diversity in terms of geographical location and size of cities.

Applicants are encouraged to show how their proposals take into account and build upon existing programmes and/or the results of previous R&I projects. While addressing the particular challenge of a topic and ensuring the doing no harm principles, proposals should also contribute as relevant to the following cross-cutting priorities: (1) zero pollution, (2) sustainable digitisation and green ICT, (3) interoperability and shared standards, and (4) affordability, social inclusiveness and accessibility.

Strong synergies contributing to the implementation of the objectives of the Cities Mission is expected also from other relevant Horizon Europe partnerships such as e.g. the European Partnership for People-centric Sustainable Built Environment (Built4People) and on Driving Urban Transitions to a Sustainable Future (DUT). Topics under the Cities Mission Work Programme are also relevant for the Cancer Mission, in particular when addressing co-benefits generated by achieving climate-neutrality such as reduced pollution, improved health and wellbeing, increased active mobility contributing then to cancer prevention. Similarly, actions funded under the Cancer Mission focusing on behavioural change can contribute to the objectives of the Cities Mission especially when targeting actions at urban level.

The European Institute of Innovation and Technology (EIT) and its Knowledge and Innovation Communities (KICs), with their experience in delivering holistic, transformative, citizen-driven and systemic solutions and innovations to specific global challenges, will also contribute to the Cities Mission in particular EIT Climate-KIC, EIT InnoEnergy and EIT Urban Mobility.

Proposals should set out a credible pathway to contributing to the main objectives of the Cities Mission, and more specifically to the following impacts:

- Enhanced innovation capacity of local/regional administrations and accelerated uptake of shared, smart and sustainable zero emission solutions.
- Increased use of transferrable solutions for sustainable mobility of people and goods exploiting the combined potential of zero-emission mobility systems, automation and connectivity.

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- Increased deployment of solutions involving in particular urban greening, renaturing, green/blue infrastructures, nature-based solutions and ecosystem-based approaches tackling both climate mitigation and adaptation aspects.
- Development and testing a digital twin of a Positive clean Energy District and improved knowledge on the necessary (replicable) elements and processes needed to make first a district and subsequently a whole city climate-neutral.
- Increased capacity among European cities, with particular attention to those selected under the Cities Mission, to design and roll out their Climate City Contracts, including related investment plans and to achieve climate-neutrality by 2030.

The following call(s) in this work programme contribute to this Mission:

Call	Budgets (EUR million)	Deadline(s)
	2023	
HORIZON-MISS-2023-CIT-01	70.00	27 Apr 2023
HORIZON-MISS-2023-CIT-02	5.00	06 Sep 2023
Overall indicative budget	75.00	

Call - Research and Innovation actions to support the implementation of the Climate-neutral and Smart Cities Mission

HORIZON-MISS-2023-CIT-01

Conditions for the Call

Indicative budget(s)¹¹⁵

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) ¹¹⁶	Indicative number of projects expected to be funded
		2023		
Opening: 10 Jan 2023 Deadline(s): 27 Apr 2023				
HORIZON-MISS-2023-CIT-01-01	IA	50.00 ¹¹⁷	Around 25.00	2
HORIZON-MISS-2023-CIT-01-02	IA	20.00 ¹¹⁸	6.00 to 7.00	3
Overall indicative budget		70.00		

General conditions relating to this call	
<i>Admissibility conditions</i>	The conditions are described in General Annex A.

¹¹⁵ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

The Director-General responsible may delay the deadline(s) by up to two months.

All deadlines are at 17.00.00 Brussels local time.

The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

¹¹⁶ Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

¹¹⁷ Of which EUR 1.69 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.47 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 3.82 million from the 'Digital, Industry and Space' budget and EUR 0.45 million from the 'Civil Security for Society' budget and EUR 43.58 million from the 'Climate, Energy and Mobility' budget.

¹¹⁸ Of which EUR 1.69 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.47 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 3.82 million from the 'Digital, Industry and Space' budget and EUR 0.45 million from the 'Civil Security for Society' budget and EUR 13.58 million from the 'Climate, Energy and Mobility' budget.

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<i>Eligibility conditions</i>	The conditions are described in General Annex B.
<i>Financial and operational capacity and exclusion</i>	The criteria are described in General Annex C.
<i>Award criteria</i>	The criteria are described in General Annex D.
<i>Documents</i>	The documents are described in General Annex E.
<i>Procedure</i>	The procedure is described in General Annex F.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G.

Proposals are invited against the following topic(s):

HORIZON-MISS-2023-CIT-01-01: Co-designed smart systems and services for user-centred shared zero-emission mobility of people and freight in urban areas (2Zero, CCAM and Cities' Mission)

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 25.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 50.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 7 by the end of the project – see General Annex B.
<i>Legal and financial set-up of the Grant</i>	The rules are described in General Annex G. The following exceptions apply:

<i>Agreements</i>	Grants awarded under this topic will be linked to the following action(s): HORIZON-MISS-2021-CIT-02-03 Collaboration between the consortia awarded as well as with the 2Zero and CCAM Partnerships and the Cities Mission Platform¹¹⁹ is essential and consortia must ensure that appropriate provisions for activities and resources aimed at enforcing this collaboration are included in the work plan of the proposal. The collaboration between the consortia awarded as well as with the Mission Platform must be formalised through a Memorandum of Understanding to be concluded as soon as possible after the projects' starting date.
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Expected Outcome: Project results are expected to contribute to all of the following outcomes:

- Mobility solutions that respond to people's and cities' needs, co-designed with local authorities, citizens and stakeholders, tested and implemented in cities to achieve climate neutrality by 2030.
- Transferrable solutions for mobility of people and goods exploiting the combined potential of electrification, automation and connectivity to significantly and measurably contribute to:
 - o The Cities Mission's objective of climate neutrality by 2030;
 - o Reduction of CO2 emissions supporting the 55% reduction goal for 2030;
 - o Lower energy demand;
 - o Improved air quality, less noise;
 - o Reduced congestion, more reliable, predictive travel times and more efficient transport operations;
 - o More effective use of urban space also considering the other transport modes and multimodal hubs;
 - o Improved safety particularly for vulnerable road users;
 - o Improved inclusiveness, especially by facilitating equitable and affordable access to mobility for all users, in particular for people with reduced mobility.

¹¹⁹ Conceived through the Horizon 2020 project NetZeroCities - Accelerating cities' transition to net zero emissions by 2030, Grant Agreement n. 101036519, to be scaled up through the topic *HORIZON-MISS-2021-CIT-02-03: Framework Partnership Agreement (FPA) for the Climate-Neutral and Smart Cities Mission Platform*

- Economically viable, modular and adaptable solutions that are transferrable among cities committed to achieving climate neutrality by 2030.
- Capacity built among local authorities, users and mobility systems providers to accelerate the take-up of shared, smart and zero emission solutions and to implement their monitoring and evaluation.
- Implementation plans for local and regional transport authorities to replicate the roll-out of innovative smart mobility solutions and related infrastructure (in particular for charging and/or connectivity) in cities beyond those involved in the project.
- Contribution to updates of urban and transport policies as well as relevant strategic research and innovation agendas (SRIA), particularly of the 2Zero and CCAM partnerships.

Scope: Urban mobility is a key sector that cities need to address for accelerating their transition to climate neutrality: citizens, freight forwarders, urban planners, transport operators as well as technology providers should jointly exploit the combined potentials of electric, automated and connected vehicles as well as integrated and shared people mobility and freight transport in their planning and actions. This requires a mutual understanding and alignment of the opportunities of technical solutions from the CCAM and 2Zero partnerships and of needs identified by users and cities striving for the Mission target of climate neutrality.

Proposals should include co-designed innovative passenger mobility and freight transport concepts which are agreed between technology providers and cities, in cooperation with end users, citizens and other stakeholders (for example visitors) to optimise the performance, ease of use and to maximise uptake. They should then be tested and demonstrated in real environments and use cases before being replicated. They should complement current public transport and freight transport services as well as active mobility and micromobility, also with modular and interoperable last mile choices, while being scalable for the roll out, adaptability and co-implementation for different types of cities. At the same time, they should help to identify new challenges, e.g. regarding flexibility, privacy and resilience, in order to set requirements for the further improvement of technologies.

Proposals are expected to develop, test and demonstrate innovative solutions for mobility of people and freight exploiting the combined potential of electrification, automation and connectivity. Proposals must consider and explore the opportunities for technology transfer and synergy potentials with the respective other domain to fully cover passenger and goods mobility, although a primary focus on either people or goods mobility is possible. Solutions should be based on existing technologies and should satisfy cities' and users' needs, targeting implementation of pilot cases at city level to ensure feasibility, buy-in, acceptance and thus a seamless integration of mobility solutions and infrastructure in a citywide transport system.

All the following aspects should be addressed by the proposals:

- Establish a co-design process between local public authorities, city planners, end users (for example inhabitants, visitors, commuters) and automated and zero-emission mobility systems providers to ensure a user-centric and seamless integration of solutions in existing ecosystems.
- Build upon the results of recent collaborative research on, for example, power grid integration, charging infrastructure, vehicle connectivity, automation or smart fleet, road traffic and energy management, safety of vulnerable road users, and also build upon relevant experience of cities and partnerships.
- Demonstrate integrated and shared, automated and zero-emission solutions and services for people mobility and freight transport. Where needed and duly justified, design of vehicles and functions and the development of specific infrastructures for energy and joint and harmonized data management¹²⁰ to extend and optimise their use can be included.
- Develop open while resilient systems and replicable solutions that can be scaled-up within a city environment and flexibly adapted to current and evolving needs and use cases in the context of Sustainable Urban Mobility Plans (SUMP). Mobility services to and from sub-urban areas should be included in proposed solutions, so as to widen the pool of possible users of these solutions, services and systems.
- Co-design implementation plans for local and regional transport authorities to roll-out innovative smart mobility solutions and related infrastructure (in particular for charging and connectivity) and to lower energy demand.
- Evaluate cost and benefits of the systems and services tested along with real-world challenges and opportunities, based on user and city needs, and provide feedback on viability and limitations as well as new requirements to the 2Zero and CCAM partnerships.
- Support the development of skills on the planning and implementation of smart, shared and zero-emission urban mobility systems within the local authorities and co-creation with private stakeholders along SUMP and SULP (Sustainable Urban Logistics Planning) guidelines, e.g. the practitioner briefing on Road Vehicle Automation of the Sustainable Urban Mobility Plans.
- Disseminate results via the 2Zero and CCAM partnerships and the Mission Platform and via relevant events, such as CIVITAS, Transport Research Arena (TRA) conference and other European events.

Proposals should fully exploit technologies developed/under development in the 2Zero and CCAM partnerships when designing, testing and demonstrating solutions and services, such as, e.g., automated and connected functions or digital twins optimising the charging, parking,

¹²⁰ Compliant with FAIR data principles
(https://ec.europa.eu/info/sites/info/files/turning_fair_into_reality_0.pdf.)

safe (remote) control, operational design domain of vehicles or the fleet, traffic management and last-mile operations.

To allow for a thorough evaluation of the projects' ambition, progress and effect compared to the state of the art in the European Union and internationally, proposals are expected to provide measurable or predictable indicators of contributions of the tested solutions to the applicable outcomes and impacts expected from the 2Zero and CCAM partnerships as well as the Cities Mission. These should be supported by clear baselines, quantified targets and appropriate review processes for each participating city and include a detailed analysis of present and future potential user groups. The 'CIVITAS Process and Impact Evaluation Framework' and 'Sustainable Urban Mobility Indicators', where appropriate in combination with other sector-specific impact evaluation methodologies, should be used to evaluate the impact of the solutions.

Selected projects may consider including activities to investigate and foster societal readiness, for example by measuring the acceptability of new mobility solutions as well as behavioural change. This could include inter alia methods of co-assessment as well as actions to increase public awareness in order to anticipate and mitigate potential negative rebound effects.

This should be accompanied by mechanisms for common lesson drawing and learning, within the project, between the projects funded under this topic and through the Cities Mission Platform and 2Zero/CCAM partnerships.

Each proposal should envisage pilot demonstrations in at least two cities (lead cities) situated each in a different Member State or Associated Country. Proposals should provide the necessary evidence of the cities' commitment to test and implement the co-designed solutions. To foster replicability and up-taking of the outcomes, each proposal should also engage at least four replication/follower cities.

The consortia awarded under this topic must establish a collaboration agreement, to identify clear links among themselves and ensure complementarity, coordination and exchange on relevant linked activities. The consortia awarded should also foresee active collaboration with relevant and related projects funded under this call in order to address synergies and complementarities between the projects of the Cities Mission portfolio. In particular collaboration with the Mission Platform is essential. The collaboration between consortia awarded as well as with the Mission Platform must be formalised through a Memorandum of Understanding to be concluded as soon as possible after the projects' starting date.

In addition, given the important role of territories in which the participating cities are located, lead cities are encouraged to seek cooperation with and support from their territories, where relevant (metropolis, functional urban area, grouping of interacting municipalities with the cities, region, etc.). Support could take the form of, for example, an integration or link in an existing or future programme of the territory, financial support, or the involvement of representatives of these territories as partners in the project.

This topic requires the effective contribution of SSH (Social Sciences and Humanities) disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities. Social innovation should also be considered to support the actions under this topic in order to match innovative ideas with social needs. Inclusiveness of vulnerable populations (older people, children) as well as gender perspectives in mobility should be considered.

If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries are expected to clearly describe if and how the use of Copernicus and/or Galileo/EGNOS are incorporated in the proposed solutions. In addition, if the activities proposed involve the use and/or development of AI-based systems and/or techniques, the technical and social robustness of the proposed systems has to be described in the proposal.

HORIZON-MISS-2023-CIT-01-02: Positive clean energy district (PED) digital twins – from modelling to creating climate neutral Cities

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 6.00 and 7.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 20.00 million.
<i>Type of Action</i> <i>Eligibility conditions</i>	Innovation Actions The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 6-8 by the end of the project – see General Annex B.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Grants awarded under this topic will be linked to the following action(s):

	HORIZON-MISS-2021-CIT-02-03 Collaboration with the Cities Mission Platform ¹²¹ is essential and projects must ensure that appropriate provisions for activities and resources aimed at enforcing this collaboration are included in the work plan of the proposal. The collaboration with the Mission Platform must be formalized through a Memorandum of Understanding to be concluded as soon as possible after the projects' starting date.
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Expected Outcome: Project results are expected to contribute to all the following expected outcomes:

- Increased number of (tangible) city planning actions for positive clean energy districts using the (proto-)PED design, development and management digital twin tools (based on pre-market research learnings) using open-standards based components which can be reused elsewhere.
- Enhanced data gathering approaches with identification relevant (standardised) multi-dimensional data set (e.g. meteorological, load profile, social, geo-spatial, etc.) high-resolution real-time data streams (e.g. renewable energy production, energy consumption), and relevant forecasting data, drawing also on the work of common European data spaces, including the smart communities data space.
- Consolidated city sensor network specifications (based on optimal density necessary), complemented by appropriate data gathering approaches for soft data.
- Increased integration of existing smaller scale management systems (e.g. Building management systems) with open-standards based operational city platforms using sectorial data (e.g. Building data, mobility, Urban Planning, etc.).
- Increased number of city planning departments / approaches using common data and (replicable) elements and processes.
- Improved performance of AI based self-learning systems for optimization of positive clean energy districts and bottom-up complex models.

Scope: Effective support for the Cities Mission should follow a systematic approach appropriate to the highly complex task of delivering climate neutral and smart cities. In order to be manageable, this task should be approached starting from the smallest representative scale, i.e. the District level.

¹²¹ Conceived through the Horizon 2020 project NetZeroCities - Accelerating cities' transition to net zero emissions by 2030, Grant Agreement n. 101036519, to be scaled up through the topic *HORIZON-MISS-2021-CIT-02-03: Framework Partnership Agreement (FPA) for the Climate-Neutral and Smart Cities Mission Platform*

Measuring, analysing and modelling the characteristics and behaviour of a potential Positive clean Energy District (PED) is necessary to get the best possible picture of the status quo and the extent of the challenge. Creating a digital twin can support identification of the most effective set of integrated solutions and the management of the system in real time in order to adapt/optimize it over time and space.

Proposed projects are expected to go beyond the creation of a digital twin and the integration of (technical) PED solutions. The proposed projects will serve as the scientific base for a reflection on the necessary, replicable elements and processes that are needed to make first a district, and later on the whole city, climate neutral.

Proposals are expected to develop a digital twin that goes beyond the virtual representation of the built environment, by integrating a comprehensive modelling layer of the local energy systems¹²² as well as mobility and transport solutions in the project defined district boundaries. The digital twin should support scenario analysis with different boundary conditions to help define the optimal solution matrix. It should draw on existing components and use open standards, technical specifications and open source software where possible.

Projects are expected to address all of the following:

- Develop and test a digital twin of a (project defined) potential Positive clean Energy District (PED) in a European city.
- Prepare an economic impact study for this digital PED twin, a risk analysis and a data security strategy.
- Use the digital twin to improve evidence-based decision-making and to create district development pathways with a clear timeline for associated transformation actions.
- Involve/train necessary public and private actors at district/city level in building and using digital twins for co-creation, communication, public consultation/dialogues and good practice sharing.
- Make use of gamification and/or co-creation approaches¹²³ to change citizens' awareness of and behaviour towards energy efficient/energy conservation and to make results of the digital twin analysis easily understandable to non-technical audiences.
- Recommend a set of actions that foster a cost effective and secure digitalization of the local energy system.
- Publish practical guidelines, reusable models, algorithms, data models, components and training material that will help other cities to successfully replicate digital twins in their district/cities.

¹²² Including Energy Communities if possible.

¹²³ e.g. in support of New European Bauhaus objectives.

Projects should establish links to the data space for smart communities and sectoral data spaces¹²⁴ as relevant (energy, mobility) as well as working with the Data Space Support Centre¹²⁵. Projects should collaborate with Living-in.EU to support efforts on developing the Minimal Interoperability Mechanisms (MIMs) approach to improving interoperability of data, systems and services, and to contribute to standardisation efforts in the area of local digital twins at European and international levels. Participation of partners and potential Positive Energy Districts is encouraged, in particular from Mission Innovation (MI) member countries¹²⁶ and linking to the objectives of the MI Urban Transitions Mission¹²⁷.

Collaboration with the Cities Mission Platform is essential and projects should ensure that appropriate provisions for activities and resources aimed at enforcing this collaboration are included in the work plan of the proposal. The collaboration with the Cities Mission Platform should be formalised through a Memorandum of Understanding to be concluded as soon as possible after the projects starting date.

Call - Associating Ukrainian cities to the Climate-neutral and smart cities Mission

HORIZON-MISS-2023-CIT-02

Conditions for the Call

Indicative budget(s)¹²⁸

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) ¹²⁹	Indicative number of projects expected to be funded
		2023		

¹²⁴ https://ec.europa.eu/newsroom/repository/document/2021-46/C_2021_7914_1_EN_annexe_acte_autonome_cp_part1_v3_x3qnsqH6g4B4JabSGBy9UatCRc8_81099.pdf i.e. section 2.2

¹²⁵ https://ec.europa.eu/newsroom/repository/document/2021-46/C_2021_7914_1_EN_annexe_acte_autonome_cp_part1_v3_x3qnsqH6g4B4JabSGBy9UatCRc8_81099.pdf i.e. section 2.2

¹²⁶ <http://mission-innovation.net/our-members/>

¹²⁷ <http://mission-innovation.net/missions/urban-transitions-mission/>. The global Urban Transitions Mission is co-led by the European Commission, the Global Covenant of Mayors and the Joint Partnership Initiative (JPI) Urban Europe.

¹²⁸ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

The Director-General responsible may delay the deadline(s) by up to two months.

All deadlines are at 17.00.00 Brussels local time.

The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

¹²⁹ Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

Horizon Europe - Work Programme 2023-2024
Missions

Opening: 04 Apr 2023 Deadline(s): 06 Sep 2023				
HORIZON-MISS-2023-CIT-02-01	CSA	5.00 ¹³⁰	Around 5.00	1
Overall indicative budget		5.00		

General conditions relating to this call

<i>Admissibility conditions</i>	The conditions are described in General Annex A.
<i>Eligibility conditions</i>	The conditions are described in General Annex B.
<i>Financial and operational capacity and exclusion</i>	The criteria are described in General Annex C.
<i>Award criteria</i>	The criteria are described in General Annex D.
<i>Documents</i>	The documents are described in General Annex E.
<i>Procedure</i>	The procedure is described in General Annex F.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G.

Proposals are invited against the following topic(s):

HORIZON-MISS-2023-CIT-02-01: Associating Ukrainian cities to the Climate-neutral and smart cities Mission

Specific conditions

<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 5.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
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¹³⁰ Of which EUR 0.42 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.12 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.95 million from the 'Digital, Industry and Space' budget and EUR 0.11 million from the 'Civil Security for Society' budget and EUR 3.39 million from the 'Climate, Energy and Mobility' budget.

<i>Indicative budget</i>	The total indicative budget for the topic is EUR 5.00 million.
<i>Type of Action</i>	Coordination and Support Actions
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Grants awarded under this topic will be linked to the following action(s): HORIZON-MISS-2021-CIT-02-03 Collaboration with the Cities Mission Platform¹³¹ is essential and projects must ensure that appropriate provisions for activities and resources aimed at enforcing this collaboration are included in the work plan of the proposal. The collaboration with the Mission Platform must be formalized through a Memorandum of Understanding to be concluded as soon as possible after the project starting date.

Expected Outcome: Project results are expected to contribute to all of the following outcomes:

- Contribute to the implementation of EU policy and international commitments (European Green Deal¹³², Global Approach to Research and Innovation¹³³).
- Identify a core group of Ukrainian cities that would commit to a climate neutrality target, including in reconstruction efforts;
- Accelerate the systemic transition to climate-neutrality of Ukrainian cities by preparing local authorities to meet the overarching objectives of the European Green Deal;
- Increase the visibility of the EU and its cities as leaders and engage cities participating in the Cities Mission in twinning and teaming activities with collaboration-minded Ukrainian city partners.

Scope: President von der Leyen's statement on 27 April 2022¹³⁴ and the subsequent Commission Communication on Ukraine Relief and Reconstruction¹³⁵ of 18 May 2022 propose to involve, through partnerships, the cities of the European Union in the reconstruction of the Ukrainian cities. This effort provides a unique opportunity for Ukraine and its cities to combine reconstruction considerations with long-term climate neutrality and

¹³¹ Conceived through the Horizon 2020 project NetZeroCities - Accelerating cities' transition to net zero emissions by 2030, Grant Agreement n. 101036519, to be scaled up through the topic *HORIZON-MISS-2021-CIT-02-03: Framework Partnership Agreement (FPA) for the Climate-Neutral and Smart Cities Mission Platform*

¹³² The European Green Deal COM(2019) 640 final

¹³³ Global Approach to Research and Innovation Europe's strategy for international cooperation in a changing world COM(2021) 252 final

¹³⁴ Additional information available at https://ec.europa.eu/neighbourhood-enlargement/news/statement-president-von-der-leyen-local-and-regional-cooperation-between-ukraine-and-eu-ukraines-2022-04-27_en

¹³⁵ Document available at https://ec.europa.eu/info/sites/default/files/ukraine-relief-reconstruction_en.pdf

sustainability objectives in line with the EU Green Deal, relevant international policy frameworks and the New European Bauhaus initiative. This will require systemic approaches and the deployment of innovative solutions to reduce in particular Green House Gas emissions in all sectors of activities so as to comply with the objective of climate neutrality. The purpose of this action is to associate more closely Ukrainian cities in the process of transition towards climate neutrality that is being promoted by the Horizon Europe Climate-neutral and smart cities Mission . Proposals are expected to address all the following activities:

- Map, on the basis of existing EU and international initiatives¹³⁶, the cities in Ukraine that could commit to the target of climate neutrality. The analysis that will be performed will be based on the methodological approach and guidelines published in the call for Expression of Interest of 25 November 2021¹³⁷;
- Following this analysis, identify and support a number of Ukrainian cities in developing their strategy for climate neutrality. Support should be provided to increase the awareness and the capacity of the local authorities on the issues related to climate neutrality. When developing their strategy for climate neutrality, cities should pay special attention to the need to reduce energy dependency from fossil fuels, to integrate climate neutrality considerations in their reconstruction plans and, when applicable, a citizen-driven systemic approach;
- Support the twinning and teaming between these Ukrainian cities and like-minded cities involved in the EU Cities Mission¹³⁸;
- Facilitate the exchange of good practices within the target group of Ukrainian cities and between them and the other cities in Ukraine.

The proposals will take into account the work already done by global city networks such as the Global Covenant of Mayors, C40 Cities and the EU's International Urban and Regional Cooperation Programme, by international and multilateral organisations such as the UN-Habitat, the World Economic Forum and the World Business Council for Sustainable Development, by international associations such as ICLEI and by global initiatives such as the Urban Transition Mission of Mission Innovation. Linkages should also be ensured with international networks that promote piloting activities such as the European Network of Living Labs (ENoLL) and with the initiatives for urban climate neutrality under the EU's Neighborhood, Development and International Cooperation Instrument.

Close collaboration with the Mission Platform presently managed by the NetZeroCities project¹³⁹ is essential and projects should ensure that appropriate provisions for activities and

¹³⁶ Proposals should in particular take into account the work done by the U-LEAD with Europe project, more information available at <https://donors.decentralization.gov.ua/en/project/u-lead>

¹³⁷ Additional information available at https://ec.europa.eu/info/news/mission-climate-neutral-and-smart-cities-info-kit-cities-now-available-2021-oct-29_en

¹³⁸ Additional information available at <https://op.europa.eu/en/publication-detail/-/publication/822ee360-c9bf-11ec-b6f4-01aa75ed71a1/language-en/format-PDF/source-256649647>

¹³⁹ Additional information available at <https://netzerocities.eu/>

resources aimed at enforcing this collaboration are included in the workplan. Detailed description of the specific activities and common actions that will be undertaken is not required at proposal stage and can be further defined at a second stage during the lifetime of the projects. The collaboration with the Mission Platform should be formalised through a Memorandum of Understanding to be concluded as soon as possible after the project starting date.

Collaboration with programmes and initiatives managed by the World Bank and the European Bank for Reconstruction and Development (EBRD) should also be considered when helping cities identify sources of funding for the implementation of their climate-neutral strategy.

Cooperation with the Global Covenant of Mayors¹⁴⁰ as well as with the European Alliance of Cities and Regions for Ukraine, which is being proposed by the European Committee of the Regions¹⁴¹ for the reconstruction of Ukraine should also be taken into account in order to facilitate the peer to peer cooperation between cities and regions in the European Union and those in Ukraine.

Other Actions not subject to calls for proposals

1. Specific Grant Agreement to the FPA to reinforce the operations of the Mission Platform

Scope:

The consortium of the selected HORIZON-MISS-2021-CIT-02-03: Framework Partnership Agreement (FPA) for the Climate-Neutral and Smart Cities Mission Platform with identified beneficiary and specific grants awarded to identified beneficiary for Research and Innovation Action under the Framework Partnership Agreement, is invited to submit a proposal for a Specific Grant Agreement (SGA) to reinforce the operational capacity of the platform. The expected outcomes of the SGA should be in line with the scope of the FPA. The standard evaluation criteria, thresholds, weighting for award criteria and the maximum rate of co-financing for this type of action are provided in parts C and E of the General Annexes.

One single proposal for SGA should be submitted. This action aims at bringing the Mission Platform to full operational capacity addressing and developing the actions needed to implement the relevant building blocks of the Framework Partnership Agreement (FPA) for the Climate-Neutral and Smart Cities Mission Platform and broadly outlined in the draft action plan submitted in this context.

The Mission Platform will assist the cities that were selected¹⁴² as a result of the open Call for Expression of Interest which was launched in November 2021 and resulted in 377 expressions of interest from cities in all 27 EU Member States and from 9 associated countries. These cities respond to the first objective of the Mission to deliver at least 100 climate-neutral and

¹⁴⁰ <https://www.globalcovenantofmayors.org/>

¹⁴¹ Additional information at <https://cor.europa.eu/en/news/Pages/Ukraine-response.aspx>

¹⁴² https://ec.europa.eu/info/files/eu-cities-mission-meet-cities_en

smart European cities by 2030. Cities that are not yet able to commit to the Mission's timeline but are willing to commit to accelerate their transition towards climate neutrality within a longer timeframe following the Cities Mission basic principles, will also receive basic support from the Mission Platform. These cities respond to the second objective of the Mission to ensure that the cities responding to the first objective act as experimentation and innovation hubs to put all European cities in a position to become climate-neutral by 2050.

Under the proposed SGA, activities should particularly focus on:

- reinforcing services aimed at supporting the preparation of tailor-made investment plans, project preparation and finance for the cities selected to participate in the Mission through the Call for Expression of Interest;
- developing activities and the related provision of basic services targeted at cities falling under the second objective of the Mission as well as cities that applied to the Call for Expression of Interest, committed to the climate-neutrality target by 2030 but were not eventually selected in the final list.

Regarding financial advisory services, activities should focus in particular on:

- Providing information, consulting services and further support cities to develop a tailor-made investment plan, including with financial and technical advisory services, to support access to public and private funding and financing as part of their Climate City Contract (CCC) and their implementation;
- Taking into account and building on the good practices developed by global, European and national initiatives and programmes and ensuring complementarity with services offered for instance by the EIB and the InvestEU Advisory hub, support cities in the preparation of specific investment projects for the transition to climate neutrality and provide tailored advice and coaching on how to best mobilise sustainable investments by the private sector.

Regarding activities and services for cities falling under the second objective of the Mission as well as cities which were not eventually selected to be part of the Mission, special attention should be paid to:

- Expand and regularly update the open-source services of the online platform, accessible to all cities, such as a city dashboard with relevant data for a given city, including its Climate City Contract (CCC); progress on metrics; an innovation readiness self-assessment tool; contributing to a smart repository of relevant knowledge (data, reports, good practices); annual barometer synthesizing the progress achieved by all cities participating in the Mission; a collaborative space for cities participating in pilot projects; a peer-based "community social network" to facilitate peer-learning between cities;
- Carry out a capacity building and mutual learning programme, supporting cities' move towards climate neutrality;

- Provide needs-based, but not individualised training, in the form of seminars, workshops and/or webinars addressing the main elements of urban climate neutrality. Topics should respond to the cities' needs and should include: climate neutrality planning; governance and stakeholder engagement; GHG emission accounting and monitoring; key sectors and strategies for reducing emissions (energy, transport, waste); local energy production and renewable energy sources; the role of smart and digital solutions; investment (funding and financing); citizen engagement and social innovation;
- Help cities to access the best available research, expertise, tools and technologies that can enable them to quickly identify and implement portfolios of innovative, high-impact interventions on a deep decarbonisation pathway;
- Provide web-based assistance to European cities that are not yet ready to commit to climate neutrality for their city by 2030, but are ready to engage to accelerate their transition in accordance with the principles of the Cities Mission;
- Foster mutual learning and exchange of good practice;
- Offer mentoring and twinning opportunities for cities committing to the objectives of the Mission.

The Mission Platform should build on existing actions, including relevant ones developed through Horizon 2020 projects. It should collaborate closely with successful ongoing initiatives that have developed knowledge and expertise, in particular with the Covenant of Mayors and their methodologies and processes co-developed with the JRC, and the Covenant Community Group of Cities Practitioners. The assets of the Smart Cities and Communities context (including Energy Communities and Living-in.eu, data space for smart communities), the Smart Cities Marketplace and the Common Services Platform should be factored in, with regard to engaging public, private and civil society stakeholders to support project financing and implementation as well as the promotion of shared standards and technical specifications to facilitate data exchange and to ensure interoperability of solutions. Synergies should be ensured with the upcoming European Urban Initiative of the Cohesion Policy and with the Urban Agenda for the EU and with actions funded under the DIGITAL European Programme.

The Mission Platform will coordinate with the European Commission to ensure that advice and support provided to cities remains aligned to the latest policies and initiatives and makes full use of available tools and services provided or supported by the Commission.

This action will be implemented through Research and Innovation Actions (RIA).

Funding rate: 100%

Form of Funding: Grants not subject to calls for proposals

Type of Action: Specific grant agreement awarded without call for proposals in relation to a Framework Partnership Agreement

Indicative timetable: First quarter 2023

Indicative budget: EUR 40.00 million from the 2023 budget¹⁴³

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¹⁴³ Of which EUR 3.38 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget, EUR 0.94 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget, EUR 7.63 million from the 'Digital, Industry and Space' budget, EUR 27.15 million from the 'Climate, Energy and Mobility' budget, EUR 0.90 million from the 'Civil Security for Society' budget.

Mission: A Soil Deal for Europe

Life on earth depends on healthy soils. Healthy soils provide food, clean water, habitats for biodiversity and other important services while contributing to climate resilience¹⁴⁴. We take these services for granted, but in fact, soils are a scarce and a threatened resource, all over Europe and beyond. It is estimated that 60-70% of soils in the EU are unhealthy, mainly as a result of unsustainable management practices. The effects of climate change are putting further pressure on this key resource. The Mission intends to support Europe's path to sustainable soil management as part of the wider green transition, in urban as well as rural areas. The Mission's goal is to establish 100 living labs and lighthouses to lead the transition towards healthy soils by 2030 for the benefit of food, people, nature and climate.

To reach its goal and objectives, the Mission foresees actions across territories and sectors. It aims at having wide-reaching impact on practices in agriculture, forestry, the food sector and other industries (e.g. biobased and waste) as well as on land use planning in rural and urban areas. The Mission will also tap into the expertise from international partners and contribute to soil health globally.

To be successful, the Mission requires that stakeholders along the whole agri-food chain, including farmers, other land managers, industries, consumers, public authorities, research and civil society at large, acknowledge the value of soils and actively contribute to soil-friendly practices, including through consumer choices.

Many of the actions to address soil health have a direct impact on some of the goals of the other Missions: carbon sequestration and storage in soil supports climate change mitigation and adaptation, and soil structure influences water-retention capacity (Climate Adaptation Mission); targeted nutrient management will lead to improvements in water quality (Ocean and Waters Mission); soils are the foundation of green urban infrastructure and nature-based solutions, e.g. for urban flood protection (Climate-neutral Cities Mission) while a reduction in soil pollution reduces the risk of cancer (Cancer Mission).

The Mission implementation plan specifies the goal and objectives as well as implementation details of the Mission 'A Soil Deal for Europe: 100 living labs and lighthouses to lead the transition towards healthy soils by 2030'¹⁴⁵. Proposals for topics under Work Programme 2023 of this Mission will be part of a wider portfolio of Mission activities. They will contribute to the Mission's goal and objectives, and more specifically to several of the following impacts:

- Increased knowledge on soils and the underlying soil processes is widely available to a range of stakeholders and the wider public, and is used to further inform science, practices and policies to reduce pressures on soils.

¹⁴⁴ In line with the Mission's implementation plan, soil health is defined as "the continued capacity of soils to support ecosystem services".

¹⁴⁵ https://ec.europa.eu/info/publications/implementation-plans-eu-missions_en

- Land managers¹⁴⁶, industries, consumers and society at large work together, in particular through Living Labs, to take effective action on soil health across sectors and land uses.
- A wide range of innovations – adapted to local conditions - are in place to address the manifold pressures on soils and improve soil conditions, thus contributing to the specific objectives of the Mission ‘A Soil Deal for Europe’.
- “Soil literacy”, awareness and societal engagement, and appreciation of the vital functions of soils, is increased, including awareness on the links between healthy soils, nutritious and safe food and a healthy environment.
- More sustainable methods for soil management are applied and contribute to healthy oceans and climate adaptation on land.
- The successful implementation of the Mission supports several EU policy and international commitments ranging from land degradation neutrality, food and nutrition security to biodiversity (e.g. Sustainable Development Goals, United Nations Convention to Combat Desertification, United Nations Convention on Biodiversity, European Green Deal including the New Soil Strategy or the Long-term Vision for the EU’s rural areas and the Common Agricultural Policy).

Under the envisioned 2024 call of the Mission ‘A Soil Deal for Europe’, the Commission, at this stage, plans, amongst others (and on a provisional basis and subject to all relevant input and discretion) to fund actions in the areas of: soil decontamination, biodiversity, citizen engagement and citizen science.

Projects under the 2023 call are expected to liaise closely together with the Mission Secretariat and actively contribute to the development of the European Soil Observatory (EUSO), hosted by the European Commission’s Joint Research Centre (JRC). Proposals are also encouraged to build on existing research results or best practices (for instance from the EJP Soil projects).

Specific requirements for multi-actor projects:

Proposals submitted for topics requesting to follow the multi-actor approach should meet all requirements listed below.

The multi-actor approach described here, which is a form of responsible research and innovation, aims to make the research and innovation process and its outcomes more reliable, demand-driven, shared and relevant to society. A multi-actor project ensures the genuine and sufficient involvement of a targeted array of actors, which serves the objectives of the topic. For instance, actors could include but not limited to: researchers, farmers, foresters and representatives of their professional associations, advisors, land managers and owners, spatial planners, food and bioeconomy businesses, consumer associations, local communities,

¹⁴⁶ The term "land manager" includes farmers, foresters, urban and spatial planners and other decision-makers in the public or private domain with regard to land use and rural areas.

educators, cultural and creative industries, citizens, civil society organisations including NGOs, and government representatives. The choice of the key actors participating in projects will depend on the objectives of the call topic and proposals. The actors are essentially the (end-) users¹⁴⁷ of the project results backed up by any other useful intermediaries and actors who can contribute with further expertise and innovative ideas relevant to the topic's objectives and support communication and dissemination. The genuine and sufficient involvement of different actors should take place all over the whole course of the project: from participation in development, planning and experiments to implementation, dissemination of results and a possible demonstration phase. Building blocks for the project proposal are expected to come from science as well as from practice: it is a 'co-creation' process. (End-) users and practitioners are to be involved, not as a study-object, but to use their practical and local knowledge and/or entrepreneurial skills to develop solutions and create 'co-ownership' of results for (end-) users and practitioners. This will contribute and speed up the acceptance and up-take of new ideas, approaches, and solutions developed in the project. Therefore, a multi-actor project proposal must describe:

- How the proposed objectives and planning are targeting the needs/problems/challenges and opportunities of the (end-)users of the project results.
- How the description of the project concept and in particular the composition of the consortium reflects a balanced choice of relevant key actors who have complementary types of knowledge (scientific, practical etc.), and will ensure a broad implementation of project results which should be ready for practice.
- How the project intends to include existing practices and tacit knowledge. This should be illustrated in the proposals with a sufficient number of high-quality knowledge exchange activities indicating the precise and active roles of the different non-scientific actors in the work. The cross-fertilisation of skills, competencies and ideas between actors should generate innovative findings and solutions that are more likely to be applied on a broad scale.
- How the project will facilitate the multi-actor engagement process by making use of the most appropriate methods and expertise.
- How the project will result in practical and ready to use knowledge, approaches, tools or products, that are easily understandable and freely accessible.
- How outputs ready for practice will feed into the existing dissemination channels most consulted by the (end-) users of the project results in the countries and regions.

In addition, to ensure EU-wide communication in all areas related to the European Innovation Partnership 'Agricultural Productivity and Sustainability' (EIP-AGRI)¹⁴⁸ and the Common

¹⁴⁷ An“(end-) user” of project result is a person who is him/herself putting the project results into practice.
¹⁴⁸ see <https://ec.europa.eu/eip/agriculture/en>

Agricultural Policy (CAP) specific objectives¹⁴⁹, in particular agriculture, forestry and rural development, this knowledge must also be summarised in an appropriate number of ‘practice abstracts’¹⁵⁰ in the common EIP-AGRI format¹⁵¹.

For areas falling outside the EIP-AGRI¹⁵² and CAP specific objectives remit, other similarly effective solutions ensuring dissemination at EU level should be sought.

Where applicable, involvement of interactive innovation groups, such as EIP-AGRI Operational Groups funded under Rural Development Programmes¹⁵³, is strongly recommended.

The following call(s) in this work programme contribute to this Mission:

Call	Budgets (EUR million)	Deadline(s)
	2023	
HORIZON-MISS-2023-SOIL-01	126.00	20 Sep 2023
Overall indicative budget	126.00	

¹⁴⁹ For areas covered by the CAP specific objectives see Article 6 of the Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021 establishing rules on support for strategic plans to be drawn up by Member States under the common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulations (EU) No 1305/2013 and (EU) No 1307/2013: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2021.435.01.0001.01.ENG

¹⁵⁰ see <https://ec.europa.eu/eip/agriculture/en/eip-agri-common-format>

¹⁵¹ The EIP common format for "practice abstracts" is available at: <https://ec.europa.eu/eip/agriculture/en/eip-agri-common-format>

¹⁵² see <https://ec.europa.eu/eip/agriculture/en>

¹⁵³ see <https://ec.europa.eu/eip/agriculture/en/about/operational-groups>

Call - Research and Innovation and other actions to support the implementation of mission A Soil Deal for Europe

HORIZON-MISS-2023-SOIL-01

Conditions for the Call

Indicative budget(s)¹⁵⁴

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) ¹⁵⁵	Indicative number of projects expected to be funded
		2023		
Opening: 17 Jan 2023 Deadline(s): 20 Sep 2023				
HORIZON-MISS-2023-SOIL-01-01	RIA	12.00 ¹⁵⁶	Around 6.00	2
HORIZON-MISS-2023-SOIL-01-02	RIA	14.00 ¹⁵⁷	Around 7.00	2
HORIZON-MISS-2023-SOIL-01-03	IA	12.00 ¹⁵⁸	Around 6.00	2
HORIZON-MISS-2023-SOIL-01-04	IA	14.00 ¹⁵⁹	Around 7.00	2

¹⁵⁴ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

The Director-General responsible may delay the deadline(s) by up to two months.

All deadlines are at 17.00.00 Brussels local time.

The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

¹⁵⁵ Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

¹⁵⁶ Of which EUR 9.90 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.21 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 1.69 million from the 'Digital, Industry and Space' budget and EUR 0.20 million from the 'Civil Security for Society' budget.

¹⁵⁷ Of which EUR 11.55 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.24 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 1.98 million from the 'Digital, Industry and Space' budget and EUR 0.23 million from the 'Civil Security for Society' budget.

¹⁵⁸ Of which EUR 9.90 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.21 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 1.69 million from the 'Digital, Industry and Space' budget and EUR 0.20 million from the 'Civil Security for Society' budget.

¹⁵⁹ Of which EUR 11.55 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.24 million from the 'CULTURE, CREATIVITY and INCLUSIVE

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Missions

HORIZON-MISS-2023-SOIL-01-05	IA	13.00 ¹⁶⁰	Around 6.50	2
HORIZON-MISS-2023-SOIL-01-06	RIA	7.00 ¹⁶¹	Around 7.00	1
HORIZON-MISS-2023-SOIL-01-07	CSA	6.00 ¹⁶²	Around 6.00	1
HORIZON-MISS-2023-SOIL-01-08	RIA	36.00 ¹⁶³	Around 12.00	3
HORIZON-MISS-2023-SOIL-01-09	RIA	12.00 ¹⁶⁴	Around 12.00	1
Overall indicative budget		126.00		

General conditions relating to this call

<i>Admissibility conditions</i>	The conditions are described in General Annex A.
<i>Eligibility conditions</i>	The conditions are described in General Annex B.
<i>Financial and operational capacity and exclusion</i>	The criteria are described in General Annex C.
<i>Award criteria</i>	The criteria are described in General Annex D.
<i>Documents</i>	The documents are described in General Annex E.
<i>Procedure</i>	The procedure is described in General

SOCIETY' budget and EUR 1.98 million from the 'Digital, Industry and Space' budget and EUR 0.23 million from the 'Civil Security for Society' budget.

¹⁶⁰ Of which EUR 10.72 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.23 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 1.83 million from the 'Digital, Industry and Space' budget and EUR 0.22 million from the 'Civil Security for Society' budget.

¹⁶¹ Of which EUR 5.77 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.12 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.99 million from the 'Digital, Industry and Space' budget and EUR 0.12 million from the 'Civil Security for Society' budget.

¹⁶² Of which EUR 4.95 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.10 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.85 million from the 'Digital, Industry and Space' budget and EUR 0.10 million from the 'Civil Security for Society' budget.

¹⁶³ Of which EUR 29.70 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.62 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 5.08 million from the 'Digital, Industry and Space' budget and EUR 0.60 million from the 'Civil Security for Society' budget.

¹⁶⁴ Of which EUR 9.90 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.21 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 1.69 million from the 'Digital, Industry and Space' budget and EUR 0.20 million from the 'Civil Security for Society' budget.

	Annex F.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G.

Proposals are invited against the following topic(s):

HORIZON-MISS-2023-SOIL-01-01: Discovering the subsoil

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 12.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The Joint Research Centre (JRC) may participate as member of the consortium selected for funding. The following additional eligibility criteria apply: Proposals must apply the multi-actor approach. See definition of the multi-actor approach in the introduction to this Mission.

Expected Outcome: Activities under this topic will help to progress towards the objectives of the Mission ‘A Soil Deal for Europe’¹⁶⁵, in particular to its specific objective 2 “Conserve and increase soil organic carbon stocks” and 6 “Improve soil structure to enhance habitat quality for soil biota and crops”. Activities should also contribute to the EU Soil Strategy¹⁶⁶ and to the Long-term vision for EU’s rural areas¹⁶⁷, as the Mission is one of its flagship initiatives.

Project results should contribute to all of the following outcomes:

- Improved access to data and knowledge on the spatial variations of the chemical, physical and biological conditions and dynamics in subsoils for land managers and public authorities to support the development of sustainable soil management practices as well as financial and policy incentives.

¹⁶⁵ https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/missions-horizon-europe/soil-health-and-food_en

¹⁶⁶ https://ec.europa.eu/environment/strategy/soil-strategy_en

¹⁶⁷ Long-term Vision for EU’s rural areas, https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/long-term-vision-rural-areas_en

- Enhanced deployment of sustainable management practices for protecting and restoring subsoils in agricultural, forest and other types of soils, and increasing relevant soil-dependent ecosystem services such as the provision of food and fibre or habitats for soil biodiversity.
- Improved understanding of the role of the subsoil in climate change adaptation and mitigation, e.g. regarding carbon and water storage.

Scope: The term “subsoil” refers to the horizons immediately below the topsoil¹⁶⁸. In the past, this layer has often been neglected as most land management practices (e.g. tillage, cover crops, forestry) are focused on the topsoil. Our understanding of subsoil issues (e.g. compaction and its persistence) in semi-natural environments (e.g. heathlands, peatlands, natural grassland) is even less developed than for agricultural and forestry subsoils. Spatial datasets on soils at both national and EU-scale have also mostly focused on topsoil.

The subsoil can have a large impact on a soil's potential productivity and supply of ecosystem services. It is estimated, for example, that plants extract between 10 and 80% of their nutrient and water requirements from the subsoil. Carbon sequestered in subsoils generally contributes to more than half of the total stocks within a soil profile. In contrast to topsoil, organic matter stored in subsoil horizons is characterised by high mean residence times¹⁶⁹.

Conversely, subsoil degradation (e.g. through compaction, pollution, salinization) may limit root penetration, reduce nutrient uptake and result in plants becoming increasingly susceptible to stress such as from pests and diseases or drought and floods. Reduced water infiltration in subsoils limits plant growth, while increasing surface water runoff and the risk of soil erosion. Timber-related activities in forests, for example, can also cause considerable soil compaction leading to a decrease in productivity of forests due to increased surface water runoff and erosion.

Activities under this topic should improve our understanding and knowledge of the links between the subsoil and ecosystem services, and they should promote practices that enhance the health status of subsoils in agriculture, forestry and urban areas, as well as sites of nature conservation and sensitive landscapes.

Proposed activities should:

- Increase knowledge of properties (e.g. soil structure) and chemical, physical and biological process dynamics and their relationships in subsoils, and how these contribute to the delivery of ecosystem services (such as carbon storage and greenhouse gas (GHG) mitigation, water retention, nutrient provision, crop productivity, and habitat for soil biodiversity) and overall soil health.

¹⁶⁸ For the purpose of this topic topsoil is defined as the uppermost layer of natural soil. Typically, this means a layer of about 10-30 cm in thickness, although this can vary according to soil type. Generally, it contains most plant roots, nutrients and biological activity, and it is affected by agricultural activities.

¹⁶⁹ Rumpel, C., Chabbi, A., Marschner, B. (2012). Carbon Storage and Sequestration in Subsoil Horizons: Knowledge, Gaps and Potentials. In: Lal, R., Lorenz, K., Hüttl, R., Schneider, B., von Braun, J. (eds) Recarbonization of the Biosphere. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-4159-1_20

- Identify pressures on the subsoil that impair a range of soil functions and ecosystem services, as well as drivers for subsoil degradation, and identify indicators to assess subsoil driven changes in soil ecosystem functioning.
- Develop tools and methods for risk assessment as regards subsoil degradation, reflecting diverse soil uses. Demonstrate practical approaches for the use of these tools and methods by land managers and policy-decision makers.
- Identify the potential of subsoils to store and maintain carbon, and to contribute to mitigating other GHG (e.g. N₂O) emissions. Work should take into account potential barriers and the synergies and trade-offs between climate regulation and other ecosystem services, such as the support to biodiversity. Consideration should be given to existing and future land use options.
- Identify existing as well as develop and test, in cooperation with land managers, sustainable management practices to improve subsoil health and therefore its functions (e.g. water retention, nutrient provision, habitat for soil biodiversity, carbon storage).
- Establish robust methods to spatially assess and monitor the chemical, physical and biological characteristics of subsoils and, to improve data collection and use. For this, sampling methods for subsoil should be harmonised in order to provide comparable and reliable data. The long-term storage and access to subsoil data should be done in close collaboration with the European Soil Observatory (EUSO).

In carrying out activities, proposals should consider various soil types and land uses and climatic/biogeographical regions in the EU and Associated Countries. With regard to agriculture, work should draw on sustainable practices, applied across a range of farming systems and for the benefit of both conventional and organic farming. The proposals selected under this topic should dedicate the necessary resources to work closely together to maximise synergies.

Activities should be undertaken in close cooperation with the European Commission's Joint Research Centre (JRC). The cooperation with the JRC is particularly relevant in view of further developing the LUCAS Soil survey and the Soil Health Dashboard under the European Soil Observatory (EUSO). Proposals should demonstrate a route towards open access, longevity, sustainability and interoperability of knowledge and outputs through close collaboration with the EUSO and other projects to be funded under the Mission 'A Soil Deal for Europe'. Potentially, the projects funded under this topic could also cooperate with living labs and lighthouses that will be created in this call or future calls of the Mission 'A Soil Deal for Europe'.

In this topic, the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement.

HORIZON-MISS-2023-SOIL-01-02: Soil pollution processes – modelling and inclusion in advanced digital decision-support tools

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 7.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 14.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The Joint Research Centre (JRC) may participate as member of the consortium selected for funding. If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).

Expected Outcome: Activities under this topic will help to progress towards the objectives of the Mission ‘A Soil Deal for Europe’, in particular, to its first operational objective of building the knowledge base for soil health and its support to ecosystems services, by closing gaps in the existing R&I programme.

Project results should contribute to all of the following outcomes:

- Increased understanding of the impact of various types of soil pollution on soil-related processes, soil functions and related ecosystem services along with increased insight into soil responses to different land-use and soil-management practices, restoration mechanisms, emission controls, climate extremes, drying-rewetting cycles and land cover dynamics at various scales.
- Enhanced access to soil relevant knowledge and data for a wide range of stakeholders that can inform practices and policies for sustainable soil management.
- Enhanced capacities are in place to integrate diverse data streams (including from Earth Observation), to model and predict soil-related processes and their interactions with soil pollutants, and ultimately to demonstrate that policy measures (for air, water, soils) can over time have a positive impact on soils.

- Data and tools available can feed effectively and further advance the “Destination Earth” initiative¹⁷⁰.

Scope: Depending on the scale, severity and type of contamination, pollutants can have a detrimental effect on soils by altering underlying chemical, physical and biological processes. Examples of common soil pollutants include heavy metals, persistent organic pollutants, pesticides, microplastics and emerging pollutants like pharmaceutical and personal care products. In agriculture, soil pollution has severe consequences with regard to food safety.

The capacity to carry out a comprehensive scenario analysis at EU level on the impact of key drivers on soil pollution (e.g. societal behaviour, changes in emissions, climate, land management practices) is currently lacking. Soil-oriented fate and transport models exist for certain pollutants (e.g. pesticides, radionuclides, nutrients, metals) but they are generally not integrated with each other, often lack a temporal capacity, and do not always provide a quantification of actual risk to human and environmental health. Models that address the extent, fate, and transport, of emerging contaminants (e.g. microplastics, pharmaceuticals, PFAS) are even scarcer.

In addition, environmental pollution modelling is also often compartmentalized despite a clear understanding that soil can be both a recipient of atmospheric deposition (e.g. nitrogen and sulphur) and a source of atmospheric pollutants and greenhouse gases (e.g. N₂O, NH₄, CO₂, dust, nutrients). While also acting as a buffer to water bodies from pollutants, soils can be at the origin of some of the main problems affecting terrestrial ecosystems, freshwater and marine ecosystems (e.g. nitrification, eutrophication, pesticides, in both water column and sediment) as well as compromise the production of safe food and human health. Currently, there is no integrated modelling system that seamlessly links all three environmental compartments (soil, air, water). In addition there is a clear need to demonstrate that policy measures that affect air quality or industrial emissions can, over time, have a positive impact also on soils and water bodies.

Proposed activities should:

- Integrate and improve existing models and develop and test new models of soil processes that allow for better and easier integration of and reduced uncertainty about soil-related (physical, chemical and biological) processes, with a particular focus on different forms of pollution and with a view to its prevention and reduction.
- Integrate soil processes modelling for quantification of soil ecosystem services with assessments of threats from diverse pollution sources.
- Ensure inter-operability between existing databases and integration into Destination Earth and the EU Soil Observatory.
- Develop specific use cases for soil modelling towards the integration of local sustainable soil management practices or catchment or field scale modelling – for example, the role

¹⁷⁰

<https://digital-strategy.ec.europa.eu/en/policies/destination-earth>

of water and wind erosion in the movement of pollutants, nutrient flows in the context of circular economy, interactions between surface-subsurface-groundwater-air components), and links with the objectives of the Oceans and Climate Missions.

- Develop scenarios based on integrated models that allow to show a) how changes in land management practices can reduce soil pollution (and in consequence air and water pollution) and b) the effects of policies on land management practices that avoid/reduce soil pollution.

Projects funded under this topic should demonstrate a route towards open access, longevity, sustainability and interoperability of knowledge and project outputs through close collaboration with the Joint Research Centre and its EU Soil Observatory¹⁷¹ and take into account other relevant projects funded under the Mission ‘A Soil Deal for Europe’ (e.g. projects funded under the topic HORIZON-MISS-2022-SOIL-01-04: Remediation strategies, methods and financial models for decontamination and reuse of land in urban and rural areas and HORIZON-MISS-2023-SOIL-01-01: Discovering the subsoil) and Destination Earth.

The proposals selected under this topic should dedicate the necessary resources to work closely together to maximise synergies and minimise overlaps. Furthermore, coordination with the successful proposals under topic HORIZON-CL3-2024-DRS-01-0201: ‘Prevention, detection, response and mitigation of chemical, biological and radiological threats to agricultural production, forestry and to food processing, distribution and consumption’ should be envisaged to avoid duplication, and to exploit complementarities as well as opportunities for increased impact. To this end proposals should foresee dedicated tasks and allocate appropriate resources.

In this topic, the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement.

HORIZON-MISS-2023-SOIL-01-03: Onsite digital technologies to monitor nutrients and chemical or biological stressors in soil and plants with relevance for food safety and nutrition

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 12.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Technology</i>	Activities are expected to achieve TRL 7-8 by the end of the project –

¹⁷¹

(https://joint-research-centre.ec.europa.eu/eu-soil-observatory-euso_en)

<i>Readiness Level</i>	see General Annex B.
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Expected Outcome: Activities under this topic will help to progress towards the objectives of the Mission ‘A Soil Deal for Europe’, in particular its operational objective 2, “Co-create and upscale place-based innovations to improve soil health in all places”.

Project results should contribute to all of the following outcomes:

- Increased scale-up, availability and use of onsite digital tools (e.g., light-based technologies, remote sensing, Artificial Intelligence (AI)) to monitor nutrients, micro-nutrients, chemical and biological stressors in soil, plants and subsequently in food in various stages of the production process (from farm to processing stages).
- Improved capacities for food safety risk mitigation and management throughout the various food production stages.

Scope: Onsite digital technologies and applications are emerging in food production and have the potential to detect chemical and biological stressors in soil and plants to help assessing, managing and eventually eliminating potential food safety risks that these stressors may pose. There is a need to improve the development and application of digital tools in primary production and food industries and boost their technological scale-up as a means to address more effectively the soil-food nexus. Moreover, those technologies will help the food industry to track safety and quality of post-harvested food grown in soils.

Proposed activities should:

- Advance and/or develop onsite digital technologies and applications (e.g., light-based technologies, remote sensing, AI) to analyse (detect and quantify) nutrients that could support appropriate interventions at the various food production stages (from farm to processing stages) to enrich soil or remove excess nutrients and micronutrients.
- Advance and/or develop onsite digital technologies and applications (e.g., light-based technologies, remote sensing, AI) to analyse (detect and quantify) chemical (contaminants, anti-nutrients, pollutants) and biological contaminants (bacteria, viruses, fungi, parasites) in soil, plants and food with the aim to mitigate/manage the potential of food safety risks associated with their presence.
- Advance and/or develop digital technologies and applications for in-field detection of soil parameters with relevance for food safety and nutrition to improve soil management practices (e.g., targeted fertilization, soil remediation).
- Advance and/or develop innovative digital technologies including exploratory modelling for calibration and prediction, to detect nutrients and micronutrients, chemical and biological contaminants which have a bearing on food quality and safety.
- Identify challenges to the scale-up of existing digital technologies related to the soil-food nexus.

Proposals should also include a dedicated task, appropriate resources and a plan on how they will collaborate with other projects funded under this topic, and ensure as well synergies with projects funded under topics HORIZON-MISS-2021-SOIL-02-03: “Linking soil health to nutritional and safe food”, and HORIZON-CL6-2023-GOVERNANCE: “Digital technologies supporting plant health early detection, territory surveillance and phytosanitary measures”.

Proposals should demonstrate a route towards open access, longevity, sustainability and interoperability of knowledge and outputs through close collaboration with the Joint Research Centre’s EU Soil Observatory (EUSO).

Potentially, the projects funded under this topic could cooperate with living labs and lighthouses that will be created in this call and future calls under the Mission.

In this topic, the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement.

HORIZON-MISS-2023-SOIL-01-04: Innovations to prevent and combat desertification

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 7.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 14.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The following additional eligibility criteria apply: Proposals must apply the multi-actor approach. See definition of the multi-actor approach in the introduction to this Mission.
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 6-8 by the end of the project – see General Annex B.

Expected Outcome: Activities under this topic will help to progress towards the objectives of the Mission ‘A Soil Deal for Europe’, in particular its specific objective 1, “Reduce land degradation relating to desertification”.

Project results should contribute to all of the following outcomes:

- The socio-economic and climatic drivers, the extent and the impacts of different types of land degradation (incl. water scarcity, vegetation loss, soil erosion) in (semi-)natural and agricultural systems of arid areas and areas becoming increasingly arid are clearly understood, accurately and reliably measured at the most relevant scale and in

connection with specific land uses, and the knowledge is widely shared among relevant actors from various sectors.

- The economic viability and environmental effectiveness of solutions for the prevention of desertification and for the restoration of degraded land (such as soil protection measures that help retain water and reduce water needs, improve management of soil organic matter, avoid salinization, protect biodiversity and increase land resilience to droughts) is firmly established in the different local or regional contexts.
- Enhanced access for land managers in desertification-prone areas to effective, context-specific restoration and prevention solutions and to information about the conditions under which they are effective.
- Dryland soils become more resilient and less vulnerable to drought and desertification. The number and size of areas under sustainable soil and water management are expanded, and the retention of moisture in the landscape and the management of soil organic matter are improved across different land-use types and local-regional conditions.

Scope: In 2017, 25% of land in Southern, Central and Eastern Europe was estimated to be at high or very high risk of desertification¹⁷². The risk is likely to have further increased since then, and to continue increasing, as a consequence of accelerating climate change and continued pressures from land use and land-use change, both in the European Union and beyond. Desertification leads to loss of biodiversity, of organic carbon and of other land-based ecosystem services, including reduced agricultural and forest productivity. Desertification further amplifies global warming through the release of CO₂ and other greenhouse gases linked with the decrease in vegetation cover. Thus it has severe environmental, social and economic consequences.

Proposed activities should:

- Synthesise and gather evidence on the drivers and impacts of land degradation at all relevant scales, using diverse data flows and where relevant models, with a view to supporting alternative land management actions (scenarios) to alleviate the pressures from land uses and land-use changes leading to desertification.
- Demonstrate the effectiveness and promote the scale-up of measures for reducing and reversing desertification and increasing soil water-retention capacity, taking into account (actual and projected) change in climatic conditions and different scales of actions as well as various land uses and land use changes.

¹⁷² Prăvălie, R., Patriche, C., Bandoca, G., “Quantification of land degradation sensitivity areas in Southern and Central Southeastern Europe. New results based on improving DISMED methodology with new climate data”, *Catena – An Interdisciplinary Journal of Soil Science – Hydrology – Geomorphology focusing on Geocology and Landscape Evolution*, No 158, 2017; pp. 309-320. The concept of desertification does not refer to the physical expansion of existing deserts but rather to the various processes – natural and human-induced – that threaten all dryland ecosystems and their biological productivity.

- Specifically for agricultural land, with regard to both conventional and organic farming, identify and demonstrate farming or other land-use practices which are more resilient and are suitable for combatting desertification while sustaining ecosystem services and preventing land abandonment.
- Facilitate cross-sectoral learning and exchange among all relevant actors by including various types of innovations (nature-based, technological, socio-economic, cultural and institutional) and/or various types of land use (natural and semi-natural as well as agricultural, agroforestry and forest areas).
- Develop options for creating incentives and overcoming obstacles for the widespread uptake of desertification prevention and restoration measures demonstrated to be effective and suitable for scaling-up.

Proposals should demonstrate a route towards open access, longevity, sustainability and interoperability of knowledge and outputs through close collaboration with the Joint Research Centre's EU Soil Observatory (EUSO) and with other projects to be funded under the Soil Mission. Proposals should also include a dedicated task, appropriate resources and a plan on how they will collaborate with other projects funded under this topic, and ensure synergies with projects funded as part of the Partnership for Research and Innovation in the Mediterranean Area (PRIMA)¹⁷³ and with the EU LIFE project NewLIFE4-Drylands¹⁷⁴.

Potentially, the projects funded under this topic could cooperate with living labs and lighthouses that will be created in this call and future calls under the Mission 'A Soil Deal for Europe'.

HORIZON-MISS-2023-SOIL-01-05: Soil-friendly practices in horticulture, including alternative growing media

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 6.50 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 13.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The following additional eligibility criteria apply: Proposals must apply the multi-actor approach. See definition of the multi-actor approach in

¹⁷³ <https://prima-med.org/>

¹⁷⁴ <https://www.newlife4drylands.eu/>

	the introduction to this Mission.
<i>Technology</i>	Activities are expected to achieve TRL 6-8 by the end of the project –
<i>Readiness Level</i>	see General Annex B.

Expected Outcome: Activities under this topic will help to progress towards the objectives of the Mission ‘A Soil Deal for Europe’, in particular its specific objectives 2 “Conserve and increase soil organic carbon stocks”, 4 “Reduce soil pollution and enhance restoration” and 6 “Improve soil structure to enhance habitat quality for soil biota and crops”. Activities should also contribute to EU climate action and to other policies in the framework of the European Green Deal, such as the Organic Action Plan¹⁷⁵, the Biodiversity Strategy for 2030¹⁷⁶ and the proposed Nature Restoration Law¹⁷⁷.

Project results should contribute to all of the following outcomes:

- Reduced carbon and overall environmental footprint of the horticultural sector¹⁷⁸ and more sustainable production systems, reducing negative impacts on soil health throughout the value chain.
- Novel products (e.g. alternative potting and soil-improving materials), production processes and management options for soil management are developed and tested and show improved environmental, social, health and safety performance, as demonstrated through improved testing and validation methods throughout the entire life cycle.
- Sustainable alternatives to peat are more widely available and used in conventional and organic horticulture.
- Policy measures have been explored and elaborated to further the uptake of sustainable alternatives to peat.

Scope: Practices in horticulture can impact soil health and related ecosystem services at different points in the value chain, for example at production sites as well as further upstream. Within horticultural production systems, soils are often subjected to particularly intensive use, which can cause among others soil compaction, soil pollution (e.g. excess nutrients or microplastics), and salinization, as a consequence of intensive irrigation. Peat is commonly used in nurseries, greenhouses and amateur horticulture as a growing medium and for soil improvement, as it has an excellent water retention capacity, is highly fertile due to the reduced leaching of nutrients and can improve soil buffering capacity. The extraction of natural peat is highly contentious as the disturbance of peatlands leads to habitat loss, soil degradation, CO₂ emissions and increased flood risks. Therefore, sustainable alternatives to

¹⁷⁵ https://ec.europa.eu/info/food-farming-fisheries/farming/organic-farming/organic-action-plan_en

¹⁷⁶ https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en

¹⁷⁷ https://environment.ec.europa.eu/topics/nature-and-biodiversity/nature-restoration-law_en

¹⁷⁸ For the purposes of this topic, horticulture is understood broadly to include the production, by professionals or amateurs, of various types of vegetables, fruits, grapes, nuts, medicinal and ornamental plants (including trees and woody plants) and mushrooms as well as related practices (e.g. hydroponics and aquaponics), while excluding large-scale arable crop production or animal husbandry.

natural peat are required. While various peat-free or peat-reduced growing media have become more widely available in recent years, their performance with regard to environmental and other relevant criteria remains difficult to assess.

Proposed activities should:

- Identify, develop and promote horticultural production systems and establish cropping practices that conserve or improve soil health, including alternative materials to be used as sustainable substitute for peat to use as substrate or soil improver in organic and conventional horticulture, with the aim of attenuating soil stress and strengthening ecosystem services.
- Further develop sustainable management practices (including digital technologies and infrastructures) to reduce the use of plant protection products, fertilizers and water in horticultural crops and improve soil structure in order to mitigate soil compaction. Where applicable, practices should cover both protected (greenhouses and tunnels) and open field systems.
- Demonstrate the feasibility and economic viability of the newly developed alternatives to production and use of peat in horticulture. This should be done in accordance with relevant EU regulatory frameworks related to their placing on the market.
- Generate data to support improved environmental, social, health and safety performance, in a life-cycle perspective and taking into account potential trade-offs and indirect consequences, including outside of the EU where relevant.
- Analyse vulnerabilities, barriers, dependencies, and need for critical infrastructure that may hinder the upscaling of production and marketing of the newly developed alternative soil-friendly practices, by professional producers as well as private consumers in amateur horticulture, and where relevant suggest policy measures to overcome obstacles.

In this topic the multi-actor approach has to be implemented by involving a wide range of stakeholders (e.g. industry including SMEs, public authorities, research centres, public and private investors, civil society) to co-create sustainable solutions and increase opportunities for them to be scaled up.

The proposals selected under this topic should dedicate the necessary resources to work closely together to maximise synergies. Proposals should demonstrate a route towards open access, longevity, sustainability and interoperability of knowledge and outputs through close collaboration with the EU Soil Observatory and other projects to be funded under the Mission ‘A Soil Deal for Europe’. Furthermore, proposals should take into account and build on outputs from other relevant projects such as e.g. EXCALIBUR¹⁷⁹.

¹⁷⁹ <https://cordis.europa.eu/project/id/817946>

Potentially, the projects funded under this topic could also cooperate with living labs and lighthouses that will be created in this call or future calls of the Mission ‘A Soil Deal for Europe’.

In this topic, the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement.

HORIZON-MISS-2023-SOIL-01-06: Soils in spatial planning

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 7.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 7.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The Joint Research Centre (JRC) may participate as member of the consortium selected for funding. If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).

Expected Outcome: Activities under this topic will support a more structured approach to sustainable land management in line with global commitments for land degradation neutrality¹⁸⁰ and EU efforts for a balanced development of the EU territory. This will help to sustain ecosystems in rural and urban areas as aimed for in the EU Long-term Vision for Rural Areas and other EU Green Deal strategies. Activities will in particular contribute to the implementation of the roadmap towards no net land take and reduced soil degradation as defined under the EU Soil Strategy¹⁸¹.

Project results should contribute to all of the following outcomes:

- The value of ecosystem services provided by soils is more systematically recognised and integrated in spatial planning and land use decisions in urban and rural areas due to increased awareness of spatial planning authorities on the importance of soil functions and soil health overall. As a consequence the demand for the provision of soil ecosystem services and other societal demands for land are more easily reconciled.

¹⁸⁰ SDG target 15.3 on land degradation neutrality: <https://sdgs.un.org/goals/goal15>

¹⁸¹ https://ec.europa.eu/environment/strategy/soil-strategy_en

- Municipalities and public authorities have information, data and planning tools at hand to develop and implement (participatory) strategies for more adaptive land management in accordance with land neutrality targets (no net land take by 2050), this allowing to increase land use efficiency, reduce soil sealing and apply the principles of the “land take hierarchy”¹⁸².
- Spatial plans promote the use of nature-based solutions for the improvement of ecosystem services provision, in particular on currently sealed areas.
- Approaches for rezoning, restoration and de-sealing are available for building land and infrastructure which is no longer in use or to be reused.

Scope: Land is a limited resource and needs to be managed carefully to meet the various, conflicting societal demands on land and soil. These demands arise e.g. from urbanisation, food/biomass production and environmental protection. Inadequate practices in land management and in land use planning are main drivers of land degradation and result in the loss of important soil functions. In urban areas for example, soil sealing leads to reduced evaporation and infiltration of water into the soil. As a consequence, the risk of floods and heat waves in cities increases significantly. In rural areas, fragmented landscapes lead to a loss of habitats for species and to reduced capacities of soils to perform important functions such as water regulation or carbon storage. At the same time, pressures on rural housing, especially in the aftermath of COVID-19, also call for adequate planning to ensure that soil and land management addresses the manifold needs of rural populations. Spatial planning has a considerable role in steering a more balanced and sustainable use of land and ensuring that net land take is reduced, in particular if applying the principles of a “land take hierarchy”¹⁸³.

Activities under this topic should identify mechanisms and highlight associated benefits that accrue from the increased consideration of soil functions by the spatial planning sector, both in urban and rural environments.

Proposed activities should:

- Undertake a systematic review and analysis of how soils, their functions and ecosystem services as well as soil threats are considered in the various levels of spatial planning systems in the EU and Associated Countries.
- Improve the knowledge on trade-offs required to maintain the provision of ecosystem services in the context of further expanding urban, peri-urban and rural areas.
- Identify good planning practices that integrate soils and their ecosystem services into spatial planning and show the impact of these practices on actual land use in urban and rural areas such as on: land take, the re-use of land, restoration, de-sealing and the

¹⁸² EU Soil Strategy for 2030, section 3.2.2 : <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0699>

¹⁸³ See section 3.2.2 of the EU Soil Strategy: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0699>

support to soil functions. In addition to examples from Member States and Associated Countries, good experiences from Third Countries could be highlighted as well. Due attention shall be given to examples promoting soil functions and reducing soil sealing through nature-based solutions.

- Work together with public authorities to develop strategies for zero net land take by 2050 and provide practical recommendations for a better integration of soils into existing spatial planning practices, taking into account synergies with the management of other resources such as water. Activities should identify the main bottlenecks for the adoption of planning systems which are based on more integrated, sustainable and resource efficient use of land.
- Provide opportunities for training of planners and exchange of experiences (e.g. events, information tools) between the various actors involved in (participatory) planning processes and land use decisions at various levels.
- Improve the tools as well as the data and information basis (including maps) available to spatial planners and decision-makers regarding soil functions and ecosystem services.

The selected project(s) should liaise with the Joint Research Centre to make sure that relevant data, maps and information can potentially be used and displayed by the European Soil Observatory.

As relevant, activities should seek to link up with the European Bauhaus and contribute to its objectives and initiatives.

HORIZON-MISS-2023-SOIL-01-07: Back to earth: bringing communities and citizens closer to soil

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 6.00 million.
<i>Type of Action</i>	Coordination and Support Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The following additional eligibility criteria apply: Proposals must apply the multi-actor approach. See definition of the multi-actor approach in the introduction to this Mission.
<i>Legal and financial</i>	The rules are described in General Annex G. The following exceptions

<i>set-up of the Grant Agreements</i>	apply: Beneficiaries should provide financial support to third parties. The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 150 000. This should allow projects and initiatives to have the appropriate scale and ambition needed to achieve the objectives of the actions described under the scope.
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Expected Outcome: Activities under this topic will help progress towards the goal of the Mission ‘A Soil Deal for Europe’ and in particular by contributing to its specific objective 8 “Increase soil literacy across society”¹⁸⁴. Activities should also contribute to the Education for Climate Coalition¹⁸⁵ and to the Long-term vision for EU’s rural areas¹⁸⁶ as the Mission is one of its flagship initiatives.

Project results are expected to contribute to all of the following outcomes:

- Increased societal awareness of the importance of soil and the challenges it faces, as well as engagement in the protection and restoration of soil health.
- Improved access to innovative methodologies (including digital ones, but not limited to these) to communicate as well as to engage citizens in the protection and restoration of soil health.
- Cultural and creative industries (CCIs), artists and civil society organisations are mobilised, along with universities, research institutes and public institutions, to increase awareness and citizens’ engagement in the protection and restoration of soil health.
- Increased soil literacy of policy-makers at different levels (e.g. European, national, regional and local) and their capacity to engage the population in the protection and restoration of soil health.

Scope: CCIs, artists and civil society organisations can play a significant role in the green transition in general, and in the protection and restoration of soil health. Indeed, the cultural and creative sectors, as well as civil society organisations, can address environmental sustainability issues in various ways: first of all, by ensuring that their activities are sustainable (e.g. in their events they can avoid the use of single-use plastics or serve organic food); secondly, they can contribute to green other sectors (e.g. organisations that offer training for home or office composting); and finally, they are key in raising awareness, for example on the importance of soil and its functions for society (e.g. documentaries,

¹⁸⁴ Mission Implementation Plan, https://ec.europa.eu/info/sites/default/files/research_and_innovation/funding/documents/soil_mission_implementation_plan_final_for_publication.pdf

¹⁸⁵ Education for Climate Coalition, <https://education-for-climate.ec.europa.eu/en>

¹⁸⁶ Long-term Vision for EU’s rural areas, https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/long-term-vision-rural-areas_en

communication campaigns, podcasts, music, etc.), and in engaging people (e.g. innovative methods can be used to engage people in participatory processes).

The cultural and creative sectors were particularly affected during the COVID-19 crisis, but they “are a significant driver of local development through job creation and income generation, and generate important spillovers to the wider economy”¹⁸⁷ as well as to the society.

CCIs, artists, and civil society organisations working together with soil experts, can contribute to increase soil literacy by mobilising and engaging the population in the protection and restoration of soil health as well as in tackling soil challenges. Various and innovative methodologies and tools to increase citizens’ awareness and engagement should be tested. .

The successful proposal should:

- Establish a network of relevant actors (e.g. artists, soil scientists, researchers, communication and engagement experts, public authorities – including local administrations) and projects around art, humanities, cultural and creative industries, that can serve to elevate the importance and value of soils in the context of citizen’s lives by increasing people awareness and engagement.
- Include all relevant actors from the beginning, but the network should be expanded during the life of the project by providing financial support to third parties of up to 150 000 € per project or initiative. The total amount of budget to be granted through financial support to third parties should correspond to at least 60% of the total budget of the topic. This financial support should be used to fund smaller projects or initiatives to work in the activities listed below and contribute to the overall goal of increasing soil literacy across society. In selecting the projects, the consortium should take into consideration quality, geographical balance and coverage aiming at covering several Member States and Associated Countries, and include a variety of territories ensuring that both rural and urban areas are covered. The selection process for these projects will be based on principles of transparency, fairness and objectivity.
- Coordinate, monitor (appropriate indicators and KPIs should be identified) and evaluate the actions of the projects and initiatives from third parties receiving financial support. It is also expected to scale up successful initiatives and to contribute to the implementation of the below-mentioned activities, in particular when it comes to run an innovative communication campaign and to build capacities of policy makers at different levels on how to best engage the population in the protection and restoration of soil health.
- Organise an annual festival open to the public with the participation of the projects and initiatives financed through the financial support to third parties, where the activities aimed at increasing soil literacy across society are amplified to reach a broader audience.

187 OECD, The culture Fix, <https://www.oecd-ilibrary.org/docserver/991bb520-en.pdf?expires=1654264045&id=id&accname=oid031827&checksum=094F587A2DCB621EAA3F8486CCFAB8E1>

In the organisation of the festival, the proposal should consider accessibility, inclusiveness and sustainability. The proposal should also include a long-term plan to ensure the continuity of the festival beyond the life of the Horizon Europe funded project.

The projects and initiatives financed through the financial support to third parties should:

- Run innovative communication campaigns through different tools (e.g. social media, magazines, podcasts, posters, arts, movies, documentaries) to raise awareness on the importance of soil and engage citizen proposing hand-on activities identified as sustainable practices by soil scientists. The campaigns should highlight the relevance that soil has in people's daily life and link it with people's values.
- Engage citizens in the protection and preservation of soil as well as in tackling soil challenges (such as contamination, erosion, etc.), through innovative, participatory and creative methodologies (e.g. by applying arts-based methods for transformative engagement, citizen assemblies, by organising training on composting and by setting up community composting spaces, community park management, community vegetable gardens).
- Design and provide tools and materials for supporting administrations at different levels (e.g. European, national, regional and local) in engaging citizens in the protection and restoration of soil health.
- Build capacities of policy-makers at different levels (local, regional, national and international) and provide examples on how to best engage citizens on soil protection and restoration activities.

Proposals must implement the multi-actor approach and involve a wide range of actors, such as artists, cultural and creative industries, civil society organisations, citizen engagement experts and public authorities, along with soil scientists.

Proposals under this topic should include social sciences and humanities (SSH) disciplines (e.g. behavioural sciences, communication, and arts).

Proposals are encouraged to demonstrate a route towards open access, longevity, sustainability and interoperability of knowledge and outputs through close collaboration with the European Soil Observatory (EUSO) and other projects to be funded under the Mission "A Soil Deal for Europe".

Proposals should create synergies with projects funded under the topics HORIZON-MISS-2021-SOIL-02-06 and HORIZON-MISS-2022-SOIL-01-07. Proposals are also encouraged to create synergies with relevant activities supported under the Creative Europe programme¹⁸⁸.

¹⁸⁸

[Creative Europe | Culture and Creativity \(europea.eu\)](https://europea.eu)

HORIZON-MISS-2023-SOIL-01-08: Co-creating solutions for soil health in Living Labs

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 12.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 36.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The following additional eligibility criteria apply: Proposals must apply the multi-actor approach. See definition of the multi-actor approach in the introduction to this Mission.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 200 000, to allow for the active participation of appropriate stakeholders, including farmers, businesses or civil society in living labs and achieve the objectives of the actions described under the scope.

Expected Outcome: Activities under this topic respond directly to the goal of the Mission ‘A Soil Deal for Europe’¹⁸⁹ of setting up 100 living labs by 2027 to lead the transition to healthy soils by 2030. They support the specific objectives of the Mission ‘A Soil Deal for Europe’ dealing with urgent soil health challenges (see in particular specific objectives 1 to 6 and 8). Activities should also contribute to meeting the European Green Deal ambitions and targets, such as those related to food and nutrition security, climate, biodiversity, environment and rural areas¹⁹⁰.

Project results are expected to contribute to all of the following outcomes:

- Living labs across Europe are fully operational and have established themselves as places for co-creation and testing of solutions for soil health in rural and urban areas.

¹⁸⁹ [EU Mission Soil Deal for Europe Implementation Plan | European Commission \(europa.eu\)](https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/long-term-vision-rural-areas_en)

¹⁹⁰ https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/long-term-vision-rural-areas_en

- Increased capacities for participatory, inter- and transdisciplinary R&I approaches, allowing for effective cooperation between research, practice and policy to tackle soil health challenges.
- Practice oriented knowledge and tools are more easily available to land managers and contribute to an enhanced uptake of solutions for soil health and related ecosystem services across regions where the selected living labs are operating.
- Improved collaborations between rural and urban areas as well as across sectors on soil health issues and increased consideration of effective solutions in regions where the selected living labs are operating.
- Accelerated production of accurate knowledge and uptake of innovations by land managers or other actors from various sectors in and beyond the living labs where projects are operating.
- Policy makers are more aware of local needs with regard to soil health and can use this knowledge to design more effective policies.
- Strengthened science-practice-policy dialogues and increased availability of data inform policy instruments and promote soil health in the EU and Associated Countries more effectively.

Scope: While more research is still needed to restore and maintain healthy soils in the EU, an important barrier still encountered to accelerate the transition towards a climate-neutral and green European Union is the gap between science and practice, between knowledge and implementation. The Mission ‘A Soil Deal for Europe’ proposes a novel approach to research and innovation in the area of soil health, including the implementation of living labs. Living labs have the potential to empower a rapid green transition towards healthy soils by developing solutions in a co-creative manner, involving actors in real life settings at territorial level to achieve large-scale impacts. Living labs will put soil and agronomic sciences at the service of local user-centred experimentations and will promote the uptake of results from research on the ground.

Nowadays, there exist various definitions and conceptualizations of living labs. However, three components are recognizable within the now well-established living labs research concept, which include co-creation with a large set of stakeholders, in real-life sites and involving the end-user¹⁹¹. For the purpose of the Mission ‘A Soil Deal for Europe’, “Soil health living labs” are defined as “user-centred, place-based and transdisciplinary research and innovation ecosystems, which involve land managers, scientists and other relevant partners in systemic research and co-design, testing, monitoring and evaluation of solutions, in real-life settings, to improve their effectiveness for soil health and accelerate adoption”.

¹⁹¹ International Agroecosystem Living Laboratories Working Group. Agroecosystem Living Laboratories: Executive Report. G20 - Meeting of Agricultural Chief Scientists (G20-MACS). 2019. Available online: https://www.macs-g20.org/fileadmin/macs/Annual_Meetings/2019_Japan/ALL_Executive_Report.pdf (accessed on 30 June 2022)

Living labs are collaborations between multiple partners that operate and undertake experiments on several sites at regional or sub-regional level¹⁹². These “experimental sites” could represent e.g. farms, forest stands, urban green or industrial areas, enterprises and other entities, where the work is carried-out and monitored under real-life conditions regardless of the land size, tenure (land ownerships) or the type of economic activity. With regard to agricultural lands, work should focus on sustainable practices, applied across a range of farming systems and benefit both conventional and organic farming.

Lighthouses, in contrast, are defined as “places for demonstration of solutions, training and communication that are exemplary in their performance in terms of soil health improvement”. They are individual, local sites (one farm, one forest exploitation, one industrial site, one urban city green area, etc.) that can either be part of a living lab or be situated outside a living lab.

According to the Mission Implementation Plan, it is expected that each living lab involves partners from different backgrounds, disciplines and sectors and carries out work on about 10 to 20 experimental sites. However, depending on the specific context (land use, soil health challenge, etc.), applicants can propose living labs with fewer number of experimental sites. By working together on themes of common interest, the various partners involved in a living lab will be able to replicate actions and solutions, compare results, exchange good practices, validate methodologies and benefit from cross-fertilisation within a local/regional setting. The partners can be involved in all or some of the steps of the co-creation process (e.g. planning of experiments, research and lab analysis, testing in real-life conditions, monitoring and evaluation of activities, outreach and communication, dissemination of results), depending on their area of expertise.

More specifically, proposed activities should:

- Set up four to five living labs (or more, as applicable to the land use(s) and purpose of the project) to work together on thematically related soil health challenges, covering one or several land use types. The living labs should be located in at least three different Member States and/or Associated Countries. Proposals should describe the rationale for cooperation across the various living labs and explain how the work undertaken will contribute to one or more of the Mission’s specific objectives¹⁹³. Living labs on carbon farming are excluded from this topic as a dedicated topic for carbon farming living labs is opened in this work programme¹⁹⁴.

¹⁹² For the purpose of the topic the regional/sub regional level will not be defined in administrative terms (e.g. NUTS 2 or 3). Instead, applicants should describe the local context and the area in which the work of the living lab will be carried out.

¹⁹³ Reduce land degradation relating to desertification; no net soil sealing and increase the reuse of urban soils; reduce soil pollution and enhance restoration; prevent erosion; improve soil structure to enhance habitat quality for soil biota and crops; reduce the EU global footprint on soils; increase soil literacy in society.

¹⁹⁴ Topic HORIZON-MISS-2023-SOIL-01-09: Carbon farming in living labs

- Establish, based on the projects' goals and objectives, a detailed work plan with the activities to be undertaken in an interdisciplinary way, ensuring the co-design, co-development, and co-implementation of locally adapted solutions.
- Carry out participatory and transdisciplinary research and innovation in living labs in view of seeking practical solutions to problems/challenges identified, taking into account the relevant drivers and pressures. Moreover, challenges to the scaling up and the transferability of solutions should be addressed. Proposed strategies and solutions should be adapted to the different environmental, socio-economic and cultural contexts where living labs are functioning.
- Identify those sites that demonstrate high performance in terms of soil health improvement and that may be converted into lighthouses.
- Establish a baseline for the selected soils health challenge(s), in order to allow for an accurate assessment of the conditions of soils in the different sites over time and a clear monitoring of the progress of the project. When necessary, make use of the set of output soil health indicators presented in the Soil Mission Implementation Plan. To this end, work closely with the European Commission's Joint Research Centre (JRC) to contribute to their efforts on soil monitoring, the development of the European Union Soil Observatory (EUSO) and the EU baseline datasets for agreed indicators in the EUSO Soil Dashboard developed under the Administrative Agreement with JRC¹⁹⁵.
- Carry out an assessment of the possible long-term effects of the developed innovative practices or introduced solutions on soil health and related ecosystem services. This should include a demonstration of the economic feasibility and viability of the proposed solutions. Monitor the effectiveness of the introduced solutions to improve soil health and assess the contribution of the project results to strengthen policy recommendations at EU, national and regional levels.
- Propose financial and administrative strategies to ensure long-term sustainability and continuity of the living labs beyond Horizon Europe funding, including the identification of possible business models and actions involving local authorities, business communities, SMEs, investors, entrepreneurs, etc.
- Document in an easy and accessible way the developed solutions in order to communicate with society at large, in close collaboration with the dedicated 'Living Lab Support Structure' to be established by the Specific Grant Agreement under this Work Programme¹⁹⁶.

In line with the nature of living labs, proposals must implement the multi-actor approach. The list of stakeholders will vary depending on features specific to each living lab and can involve different types of actors such as researchers, land owners or land managers, industry (e.g.

¹⁹⁵ [wp-12-missions_horizon-2021-2022_en.pdf \(europa.eu\)](#)

¹⁹⁶ Other Actions not subject to calls for proposals: SGA: Specific Grant Agreement for a Living Lab Support Structure

SMEs), public administrations, representatives of civil society (e.g. consumers, environmental NGOs). Care should be taken to describe the capabilities and roles of the different partners involved in the project. For example, while some partners may lead the conceptual work and coordinate the work within and across living labs, others may focus on carrying-out experiments, providing advice, testing and validating innovative solutions, or be involved in outreach activities.

To encourage and facilitate the involvement of different types of actors in the living labs, applicants are reminded of the different types of participation possible under Horizon Europe. This includes not only beneficiaries (or their affiliated entities) but also associated partners, third parties giving in-kind contributions, subcontractors and recipients of financial support to third parties.

Proposals may provide financial support to third parties by launching cascading grant call(s) to implement one or more of the Living Lab activities described in this topic¹⁹⁷. Applicants are reminded to consult the standard conditions for “financial support to third parties” set out in Annex B of the General Annexes.

The grants size should depend on the role and type of experimentation performed by the recipients of support to third parties, the maximum amount to be granted to each third party being EUR 200 000 for the duration of the project.

Proposals should include a dedicated task, and appropriate resources, on how they will collaborate with other projects funded under this topic and with projects funded under other Work Programme topics of the Mission ‘A Soil Deal for Europe’ which are relevant to the chosen soil health challenge(s). In addition, proposals should seek for synergies with projects PREPSOIL¹⁹⁸, NATI00NS¹⁹⁹ and NBSSOIL²⁰⁰. Additionally, projects should cooperate and benefit from the services of a dedicated ‘Living Lab Support Structure’ to be established by the Specific Grant Agreement under this Work Programme.

Cooperation with relevant networks active at local level, such as EIP-AGRI operational groups, is encouraged, in order to promote the involvement of key local stakeholders in living labs activities or in the dissemination of solutions. The projects should also build on other existing activities and ensure cooperation with relevant projects and partnerships, such as EIT Knowledge and Innovation Communities (EIT KICs) or the ‘European partnership on accelerating farming systems transition: Agroecology living labs and research infrastructures’, which will also support living labs.

¹⁹⁷ To explore the full range of options including what type of costs and activities are eligible to be funded under Horizon Europe, applicants should refer to the AGA – Annotated Model Grant Agreement https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/aga_en.pdf

¹⁹⁸ <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/org-details/999999999/project/101070045/program/43108390/details>

¹⁹⁹ [Funding & tenders \(europa.eu\)](#)

²⁰⁰ [Funding & tenders \(europa.eu\)](#)

Proposals should demonstrate a route towards open access, longevity, sustainability and interoperability of knowledge and outputs through close collaboration with the European Union Soil Observatory (EUSO).

HORIZON-MISS-2023-SOIL-01-09: Carbon farming in living labs

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 12.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 12.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The following additional eligibility criteria apply: Proposals must apply the multi-actor approach. See definition of the multi-actor approach in the introduction to this Mission.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 200 000, to allow for the active participation of appropriate stakeholders, including farmers, businesses or civil society in living labs and achieve the objectives of the actions described under the scope.

Expected Outcome: Activities under this topic responds directly to the goal of the Mission ‘A Soil Deal for Europe’²⁰¹ of setting up 100 living labs by 2027 to lead the transition to healthy soils by 2030. In particular, it supports the Mission’s specific objective 2, “Conserve and increase soil organic carbon stocks”.

Activities should also contribute to meeting the European Green Deal ambitions and targets and more specifically those of the Farm to Fork Strategy, of the Commission’s Communication on Sustainable Carbon Cycles²⁰² and of the upcoming regulatory proposal on the certification of carbon removals²⁰³, as well as to Sustainable Development Goal (SDG) 13

²⁰¹ [EU Mission Soil Deal for Europe Implementation Plan | European Commission \(europa.eu\)](#)

²⁰² [Proposals to remove, recycle and sustainably store carbon \(europa.eu\)](#)

²⁰³ By the end of 2022, the Commission plans to propose an EU regulatory framework for the certification of carbon removals based on robust and transparent carbon accounting rules and requirements to monitor and verify the authenticity and environmental integrity of high-quality sustainable carbon

on climate action. Activities performed within living labs will also support the Long Term Vision for EU's Rural Areas (LTVRA)²⁰⁴.

In its 2021 Communication on Sustainable Carbon Cycles, the Commission sets out how to increase removals of carbon from the atmosphere, including by upscaling carbon farming to store more carbon in nature. Research and innovation will also contribute to this goal, providing further solutions to farmers and foresters. Measures to achieve this goal include: standardising the monitoring, reporting and verification methodologies needed to provide a clear and reliable certification framework for carbon farming, allowing for developing voluntary carbon markets; and provide improved knowledge, data management and tailored advisory services to land managers.

Project results are expected to contribute to all of the following outcomes:

- Increased carbon sequestration in soils, living biomass and dead organic matter, with environmental co-benefits safeguarded or enhanced, in different regions within the EU and Associated Countries where the selected living labs are operating.
- Increased development of good practices and methodologies to tackle specific carbon farming challenges through multi-stakeholder and transdisciplinary co-creation of innovations.
- Practice oriented knowledge and tools are more easily available to land managers and contribute to an enhanced uptake of carbon farming across regions where the selected living labs are operating.
- Accelerated production of accurate knowledge and uptake of innovations by land managers or other actors from various sectors in and beyond the living labs where projects are operating.
- Policy-makers are more aware of local needs with regard to carbon farming and can use knowledge to design and implement more effective policies.
- Strengthened science-practice-policy dialogues and increased availability of data from the ground to inform policy instruments and promote natural solutions for carbon sequestration in the EU and Associated Countries.

Scope: Carbon farming can be defined as a green business model that rewards land managers for taking up improved land management practices, resulting in the increase of carbon sequestration in living biomass, dead organic matter and soils by enhancing carbon capture and/or reducing the release of carbon to the atmosphere, in respect of ecological principles favourable to biodiversity and the natural capital overall²⁰⁵.

removals. Such rules will provide the necessary legal framework to scale up carbon farming. More details at [Certification of carbon removals – EU rules \(europa.eu\)](https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/long-term-vision-rural-areas_en).

²⁰⁴ https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/long-term-vision-rural-areas_en

²⁰⁵ https://ec.europa.eu/commission/presscorner/detail/en/ip_21_6687

More research is still needed to increase removals of carbon from the atmosphere and achieve the EU's legally binding commitment to become climate neutral by 2050, as well as to close the gap between science and practice, between knowledge and implementation. The Mission 'A Soil Deal for Europe', proposes a novel approach to research and innovation in the area of soil health, including the implementation of living labs. Living labs have the potential to empower a rapid green transition towards healthy soils by developing solutions in a co-creative manner, involving actors in real life settings at territorial level to achieve large-scale impacts. Living labs will put soil and agronomic sciences at the service of local user-centred experimentations and will promote the uptake of results from research on the ground.

Nowadays, there exist various definitions and conceptualizations of living labs. However, three components are recognizable within the now well-established living labs research concept, which include co-creation with a large set of stakeholders, in real-life sites and involving the end-user²⁰⁶. For the purpose of the Mission 'A Soil Deal for Europe', "Soil health living labs" are defined as "user-centred, place-based and transdisciplinary research and innovation ecosystems, which involve land managers, scientists and other relevant partners in systemic research and co-design, testing, monitoring and evaluation of solutions, in real-life settings, to improve their effectiveness for soil health and accelerate adoption".

Living labs are collaborations between multiple partners that operate and undertake experiments on several sites at regional or sub-regional level²⁰⁷. These "experimental sites" could represent e.g. farms, forest stands, urban green or industrial areas, enterprises and other entities, where the work is carried-out and monitored under real-life conditions regardless of the land size, tenure (land ownerships) or the type of economic activity. With regard to agricultural lands, work should focus on sustainable practices, applied across a range of farming systems and benefit both conventional and organic farming.

Lighthouses in contrast are defined as "places for demonstration of solutions, training and communication that are exemplary in their performance in terms of soil health improvement". They are individual, local sites (one farm, one forest exploitation, one industrial site, one urban city green area, etc.) that can either be part of a living lab or be situated outside a living lab.

According to the Mission Implementation Plan, it is expected that each living lab involves partners from different backgrounds, disciplines and sectors and carries out work on about 10 to 20 experimental sites. However, depending on the specific context (land use, soil health challenge, etc.), applicants can propose living labs with fewer number of experimental sites. By working together in a carbon farming living lab, the various partners involved will be able to replicate actions and solutions, compare results, exchange good practices, validate

²⁰⁶ International Agroecosystem Living Laboratories Working Group. Agroecosystem Living Laboratories: Executive Report. G20 - Meeting of Agricultural Chief Scientists (G20-MACS). 2019. Available online: https://www.macs-g20.org/fileadmin/macs/Annual_Meetings/2019_Japan/ALL_Executive_Report.pdf (accessed on 30 June 2022)

²⁰⁷ For the purpose of the topic the regional/sub regional level will not be defined in administrative terms (e.g. NUTS 2 or 3). Instead, applicants should describe the local context and the area in which the work of the Living Lab will be carried out.

methodologies and benefit from cross-fertilisation within a local/regional setting. The partners can be involved in all or some of the steps of the co-creation process (e.g. planning of experiments, research and lab analysis, testing in real-life conditions, monitoring and evaluation of activities, outreach and communication, dissemination of results), depending on their area of expertise.

More specifically, proposed activities should:

- Set up four to five living labs (or more, as applicable to the land use(s) and purpose of the project) to work together on carbon farming, covering one or several land use types. The living labs shall be located in at least, three different Member States and/or Associated Countries. Proposals should describe the rationale for cooperation across the various living labs and explain how the work undertaken will contribute to the Mission's specific objective 2.
- Carry out participatory and transdisciplinary research and innovation in living labs in view of seeking practical solutions to carbon farming challenges, taking into account the relevant drivers and pressures. Moreover, challenges to the scaling up and the transferability of solutions should be addressed. Proposed strategies and solutions should be adapted to the different environmental, socio-economic and cultural contexts where living labs are functioning.
- Identify those sites that demonstrate high performance in carbon farming and that may be converted into lighthouses.
- Establish a baseline for carbon farming, in order to allow for an accurate assessment of the conditions of soils in the different sites over time and a clear monitoring of the progress of the project. Where and when available, make use of relevant accounting methodologies for quantification of carbon removals, addressing the durability, additionality and environmental safeguards/co-benefits of carbon farming. When necessary, make use of the set of output soil health indicators presented in the Soil Mission Implementation Plan. To this end, work closely with the European Commission's Joint Research Centre (JRC) to contribute to their efforts on soil monitoring, the development of the European Union Soil Observatory (EUSO) and the EU baseline datasets for agreed indicators in the EUSO Soil Dashboard developed under the Administrative Agreement with JRC²⁰⁸.
- Carry out an assessment of the possible long-term effects of the newly developed innovative practices for carbon farming. This should include a demonstration of the economic feasibility and viability of the proposed solutions. Monitor the effectiveness of the introduced solutions for carbon sequestration and assess the contribution of the project results to strengthen policy recommendations at EU, national and regional levels.

²⁰⁸

[wp-12-missions_horizon-2021-2022_en.pdf \(europa.eu\)](https://ec.europa.eu/wp-12-missions_horizon-2021-2022_en.pdf)

- Propose financial and administrative strategies to ensure long-term sustainability and continuity of the living labs beyond Horizon Europe funding, including through identification of possible business models and actions involving local authorities, business communities, SMEs, investors, entrepreneurs, etc.
- Document in an easy and accessible way the newly developed solutions in order to communicate with society at large, in close collaboration with the dedicated ‘Living Lab Support Structure’ to be established by the Specific Grant Agreement under this Work Programme²⁰⁹.

In line with the nature of living labs, proposals must implement the multi-actor approach. The list of stakeholders will vary depending on features specific to each living lab and can involve different types of actors such as researchers, land owners or land managers, industry (incl. SMEs), public administrations, representatives of civil society (e.g. consumers, environmental NGOs). Care should be taken to describe the capabilities and roles of the different partners involved in the project. For example, while some partners may lead the conceptual work and coordinate the work within and across living labs, others may focus on carrying out experiments, providing advice, testing and validating innovative solutions, or be involved in outreach activities.

To encourage and facilitate the involvement of different types of actors in the living labs, applicants are reminded of the different types of participation possible under Horizon Europe. This includes not only beneficiaries (or their affiliated entities) but also associated partners, third parties giving in-kind contributions, subcontractors and recipients of financial support to third parties.

Proposals may provide financial support to third parties by launching cascading grant call(s) to implement one or more of the Living Lab activities described in this topic²¹⁰. Applicants are reminded to consult the standard conditions for “financial support to third parties” set out in Annex B of the General Annexes.

The grants size should depend on the role and type of experimentation performed by the recipients of support to third parties, the maximum amount to be granted to each third party being EUR 200 000 for the duration of the project.

Proposals should include a dedicated task, and appropriate resources, on how they will collaborate with projects funded under other Work Programme topics of the Mission ‘A Soil Deal for Europe’ which are relevant to carbon farming and related challenges (such as, but not limited to, HORIZON-MISS-2022-SOIL-01-06: Network on carbon farming for agricultural and forest soils). In addition, proposals should seek synergies with projects PREPSOIL²¹¹,

²⁰⁹ Other Actions not subject to calls for proposals: SGA: Specific Grant Agreement for a Living Lab Support Structure

²¹⁰ To explore the full range of options including what type of costs and activities are eligible to be funded under Horizon Europe, applicants should refer to the AGA – Annotated Model Grant Agreement https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/aga_en.pdf

²¹¹ <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/org-details/999999999/project/101070045/program/43108390/details>

NATI00NS²¹² and NBSSOIL²¹³. Additionally, projects should cooperate and benefit from the services of a dedicated ‘Living Lab Support Structure’ to be established by the Specific Grant Agreement under this Work Programme.

Cooperation with relevant networks active at local level, such as EIP-AGRI operational groups, is encouraged, in order to promote the involvement of key local stakeholders in living labs’ activities or in the dissemination of solutions. The project should also build on other existing activities and ensure cooperation with relevant projects and partnerships, such as EIT Knowledge and Innovation Communities (EIT KICs), or the ‘European partnership on accelerating farming systems transition: Agroecology living labs and research infrastructures’ which will also support living labs.

Proposals should demonstrate a route towards open access, longevity, sustainability and interoperability of knowledge and outputs through close collaboration with the European Union Soil Observatory (EUSO).

Other Actions not subject to calls for proposals

1. SGA: Specific Grant Agreement for a Living Lab Support Structure

Within the Framework Partnership Agreement (FPA) awarded under topic HORIZON-MISS-2022-SOIL-01-08: Framework Partnership Agreement (FPA) for a living lab network support structure, the selected consortium is invited to submit a proposal for a Specific Grant Agreement (SGA). This SGA will cover the first three years of the FPA (2023-2025). One single proposal should be submitted.

The expected outcomes of the SGA should be in line with the Expected Outcomes of the FPA described under Work Programme 2022 (HORIZON-MISS-2022-SOIL-01-08).

The SGA should provide further detail to put in practice the action plan presented under the FPA and more specifically in relation to the following tasks:

- Set up a structure that will act as a one-stop shop catering for the needs of living labs and lighthouses funded under the Mission ‘A Soil Deal for Europe’, and will provide tailor made advice to participants of living labs and lighthouses. This structure should support living labs in their day to day operations (including on technical, networking and communication issues) and help to harmonise approaches within and across living labs. The support structure should also flag opportunities for the living labs to make use of data and services available through European Research Infrastructures federated under the European Open Science Cloud (EOSC), as well as data from relevant Data Spaces, as indicated also in the Soil Mission implementation plan²¹⁴. The support structure should also provide guidance on how to apply the criteria for living labs as specified in the Mission Implementation Plan²¹⁵ to funded living lab projects and propose adjustments, if

²¹² [Funding & tenders \(europa.eu\)](https://europea.eu/funding)

²¹³ [Funding & tenders \(europa.eu\)](https://europea.eu/funding)

²¹⁴ [EU Mission Soil Deal for Europe Implementation Plan | European Commission \(europa.eu\)](#)

²¹⁵ As defined in Section 3.2.3 and detailed in 8.D of the Implementation Plan

deemed necessary. On this basis, the support structure should develop a methodology and procedure for the validation of living labs and lighthouses, allowing to establish “quality standards” (similar to a label) for living labs and lighthouses as these are gradually established under the Soil Mission. This should support harmonisation and comparability of approaches across soil health living labs working in different settings and on different themes. In cooperation with the PREPSOIL²¹⁶ project, the support structure should identify existing living lab and lighthouse initiatives funded outside the Mission that would meet the criteria/standards for Soil Mission living labs, as a basis for their integration into the wider network. As part of the services provided to living labs funded under the Mission, the support structure should drive the living labs towards sustainability in view of sustaining their activities beyond the lifetime of the project. This will include assisting living lab partners in the development of financial strategies and long-term management plans, as well as strengthen connections with local business communities, in particular SMEs, investors and other commercial stakeholders.

- Facilitate the exchange of knowledge, data, findings and experiences within and across living labs and lighthouses (with a focus on, but not limited to, those funded under the Mission). To this end the support structure should identify common areas of interest between funded living labs and lighthouses and propose concrete actions to create synergies and capitalise on the wealth of existing experiences and resources. This should include, amongst others, the organization of workshops, seminars, annual network meetings, cross-visits and training modules. Activities should result in the creation of working groups, learning material and tools addressing specific technical themes (e.g. on particular soil challenges or land uses) as well as transversal aspects (e.g. data management, monitoring of progress, the use of digital tools, the integration of behavioural sciences in research and innovation). In addition to enhancing operational capacities of living lab partners, the exchange of experiences should serve to promote a wider dialogue between the various living labs on their contribution to achieving the Mission’s objectives and to discuss possibilities for scaling up activities beyond the living lab areas.
- Promote the creation of new living labs and lighthouses by providing external stakeholders and potential applicants with information on the Mission’s living lab concept and its implementation under the Mission, ideas for cooperation and advice on the preparation of proposals for living lab calls under the Mission²¹⁷. To reach a wide audience, the support structure should foresee to widely publicise its information, amongst others by organising targeted match-making events in close cooperation with

²¹⁶ <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/org-details/999999999/project/101070045/program/43108390/details>

²¹⁷ Information on the concept of Living Labs can be retrieved from the Implementation Plan of Mission A Soil Deal for Europe ([Implementation Plans for the EU Missions | European Commission \(europa.eu\)](#)) and the living labs topic “HORIZON-MISS-2023-SOIL-01-08: Co-creating solutions for soil health in Living Labs”.

the project NATI00NS²¹⁸. Due attention shall be given to reach out to a wide range of stakeholders to ensure a balanced thematic and geographic coverage of the growing network of living labs and lighthouses.

- Monitor and assess activities of living labs and lighthouses in a systematic way and report on the main outcomes and experiences. This will include 6-monthly reports informing on main developments, experiences and issues encountered as well as more detailed 12-monthly analyses of the progress achieved by the funded living lab projects. The reports will bring together and complement the information arising from monitoring activities performed by each of the funded living lab projects²¹⁹. They will feed into the overall monitoring of the Mission undertaken by the upcoming Mission Implementation Platform (MIP)²²⁰. Close cooperation with the MIP regarding the reporting and monitoring requirements is therefore essential, as the support structure will be the main contact point for the MIP to obtain high quality information and data on the performance of living lab projects and will also contribute to the Mission's Dashboard developed by the MIP.
- Develop a web-portal and other tools and services for information, dissemination, exchange of experiences and outreach. By disseminating solutions which have been created, tested and demonstrated in living labs and lighthouses, the support structure should contribute to making innovations widely known so that these can be replicated by potential users outside the living lab areas. The web-portal should be linked to and complement the websites of relevant projects and the upcoming MIP. Also, attention should be given to the integration and further development of existing information and resources, in particular the interactive map of living labs and lighthouses to be set-up by the project PREPSOIL. The support structure should prepare regular newsflashes and a 3-monthly electronic newsletter to support the evolving community of practice of living labs. Communication and outreach should benefit living labs and lighthouses (operating as part of the Soil Mission or outside) as well as a wide range of stakeholders and the wider public. Through the provision of a collaborative space for living labs and lighthouse partners, the web-portal should support the establishment of a dynamic community of practice.
- Disseminate solutions created, tested and demonstrated in living labs and lighthouses so that these are widely known and can be accessed by potential users outside the living lab areas. As part of outreach activities propose innovative measures to promote the uptake and upscaling of the innovative approaches and practices to reach new living lab initiatives, as well as the methods and process through which these innovations were generated in the living labs. If relevant, conduct specific networking activities for lighthouses on how to best demonstrate exemplary solutions.

²¹⁸ [Funding & tenders \(europa.eu\)](https://europe.europa.eu/funding)

²¹⁹ See projects funded under topics HORIZON-MISS-2023-SOIL-01-08 and HORIZON-MISS-2023-SOIL-01-09

²²⁰ Link to Tender Specifications once published (Horizon Europe Work Programme 2021, Call HORIZON-MISS- 2021-SOIL-02: Procurement actions: Mission Implementation platform)

In addition to collaborating closely with living labs and other projects or structure mentioned previously (e.g. the MIP, JRC/EUSO, PREPSOIL, NATI00NS), the support structure funded under this SGA should establish particular close contact and regular exchange with the Transnational Cooperation on the Missions Approach (TRAMI)²²¹ in order to ensure making mutual use of any relevant tools, advices and services by these structures on cross-cutting issues.

Due attention should be given so that the activities performed by the living lab support structure assist all emerging living labs, regardless of their geographical and thematic coverage.

The standard evaluation criteria, thresholds, weighting for award criteria and the maximum rate of co-financing for this type of action are provided in parts C and E of the General Annexes²²².

This action will be implemented through a Coordination and Support Action (CSA).

Form of Funding: Grants not subject to calls for proposals

Type of Action: Specific grant agreement awarded without call for proposals in relation to a Framework Partnership Agreement

Indicative timetable: Third quarter of 2023

Indicative budget: EUR 3.20 million from the 2023 budget²²³

²²¹ [Home | TRAMI \(trami5missions.eu\)](https://trami5missions.eu)

²²² [wp-13-general-annexes_horizon-2021-2022_en.pdf \(europa.eu\)](#)

²²³ Of which EUR 2.64 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget, EUR 0.06 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget, EUR 0.45 million from the 'Digital, Industry and Space' budget, EUR 0.05 million from the 'Civil Security for Society' budget.

Missions' Joint Calls

Joint Call between Mission 100 Climate Neutral and Smart Cities by 2030 and Mission Adaptation to Climate Change

Call - Demonstration of climate mitigation and resilience solutions in support of the implementation of the Adaptation to Climate Change and Cities Missions

HORIZON-MISS-2023-CLIMA-CITIES-01

Conditions for the Call

Indicative budget(s)²²⁴

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) ²²⁵	Indicative number of projects expected to be funded
		2023		
Opening: 10 Jan 2023 Deadline(s): 27 Apr 2023				
HORIZON-MISS-2023-CLIMA-CITIES-01-01	IA	40.00 ²²⁶	10.00 to 12.00	4
Overall indicative budget		40.00		

General conditions relating to this call

<i>Admissibility conditions</i>	The conditions are described in General Annex A.
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²²⁴ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
The Director-General responsible may delay the deadline(s) by up to two months.
All deadlines are at 17.00.00 Brussels local time.

The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

²²⁵ Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

²²⁶ Of which EUR 3.83 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.92 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 7.54 million from the 'Digital, Industry and Space' budget and EUR 26.82 million from the 'Climate, Energy and Mobility' budget and EUR 0.88 million from the 'Civil Security for Society' budget.

<i>Eligibility conditions</i>	The conditions are described in General Annex B.
<i>Financial and operational capacity and exclusion</i>	The criteria are described in General Annex C.
<i>Award criteria</i>	The criteria are described in General Annex D.
<i>Documents</i>	The documents are described in General Annex E.
<i>Procedure</i>	The procedure is described in General Annex F.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G.

Proposals are invited against the following topic(s):

HORIZON-MISS-2023-CLIMA-CITIES-01-01: Urban greening and re-naturing for urban regeneration, resilience and climate neutrality

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 10.00 and 12.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 40.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The Joint Research Centre (JRC) may participate as member of the consortium selected for funding. The following additional eligibility criteria apply: Each action must include pilot demonstrations in at least four cities²²⁷ situated each in different Member States or Associated Countries to demonstrate how urban planning and design can be

²²⁷

Their local authorities or their mandated representatives may represent one city defined as a Local Administrative Unit (LAU), or a “greater city” or metropolitan region, taking account of Functional Urban Areas (FUA) where relevant.

	optimally deployed to develop and implement greening and re-naturing solutions for regeneration, repurposing and rehabilitation purposes whilst enhancing their overall urban climate neutrality and resilience. If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Grants awarded under this topic will be linked to the following action(s): HORIZON-MISS-2021-CIT-02-03 Collaboration with the Cities Mission Platform²²⁸ and the soon to be established Climate adaptation Mission Platform is essential, and projects must ensure that appropriate provisions for activities and resources aimed at enforcing this collaboration are included in the work plan of the proposal. The collaboration with these Mission Platforms must be formalized through a Memorandum of Understanding to be concluded as soon as possible after the projects' starting date. In grants awarded under this topic, eligible costs for major infrastructure works related to the deployment/instalment of the greening and re-naturing solutions must not constitute more than 20% of the total eligible costs. Beneficiaries' own resources and/or mobilisation and leverage of additional investments from other EU programs and initiatives (such as EU Structural and Investment Funds) and/or other sources, private or public, must make up the remaining investment costs to secure the economic and financial sustainability of the project.
<i>Exceptional page limits to proposals/applications</i>	The page limit of the application is 70 pages.

Expected Outcome: Project results are expected to contribute to all the following expected outcomes:

²²⁸ Conceived through the Horizon 2020 project NetZeroCities - Accelerating cities' transition to net zero emissions by 2030, Grant Agreement n. 101036519, to be scaled up through the topic *HORIZON-MISS-2021-CIT-02-03: Framework Partnership Agreement (FPA) for the Climate-Neutral and Smart Cities Mission Platform*

- Regenerated, rehabilitated, climate-proofed, resilient, environmentally, socially and economically upgraded built environment and in particular areas such as large estate social housing districts, deprived districts and neighbourhoods, neglected or abandoned areas, derelict industrial sites, brownfields or other dysfunctional urban sites through greening and re-naturing interventions²²⁹;
- Improved liveability, functionality, quality of life and social cohesiveness of the urban areas by means of greener, renatured, regenerated, more bio-diverse, safer, mixed/multi-use and shared urban (public) spaces and built environments, whilst catering for climate change mitigation, adaptation, resilience and energy poverty of various social groups, including women and children, elderly and people with low socioeconomic status by:
 - o Increasing the share of newly created and/or restored public green spaces, (such as green/blue infrastructures, parks, gardens, forests, green corridors, community allotments, green roofs, restored degraded urban ecosystems, nature-based solutions) by at least 25% over the total targeted under regeneration area, compared to the baseline at the start of the project;
 - o Evidence-based urban regeneration, re-purposing and rehabilitation plans, blueprints, practical recommendations and guidelines, regulations and standards, focusing on greening and renaturing solutions for pollution abatement, cleaner air, water and soil and climate mitigation and adaptation plans compatible and coherent with the corresponding regional ones;
 - o increased citizens satisfaction by at least 20% compared to the baseline at the start of the project due to increased greening/re-naturing of the urban space and improved quality of life, air, water, soil;
- Integrated, transdisciplinary, adaptive, transparent and participative urban planning practices and decision making processes to facilitate the integration and take-up of greening, renaturing and biodiversity-enhancing approaches and solutions in urban climate plans enabling for considerations of cross-scalar (cities/region) compatibility and coherence of climate planning frameworks and cross-sectorial interdependencies;
- Innovative methods, digital tools and data-driven models enabling identification, prioritization and visualization of place-based holistic solutions and scenario analysis, assessment of feasibility and cost-effectiveness and prediction of their short, mid and long term impact;
- Mutually compatible and supportive EU sectorial and urban/region cross-scalar planning for climate mitigation, adaptation and neutrality at both city and region level;

²²⁹

Such as green and blue infrastructures, nature-based solutions, green roofs and corridors, restoring degraded urban ecosystems and/or ecosystem-based approaches.

- Increased social awareness about urban climate-related vulnerabilities (such as flooding, heat-waves, droughts etc.), and the urgency for climate mitigation and adaptation and zero pollution strategies and solutions;
- Innovative monitoring²³⁰ frameworks and key performance indicators, accounting, as appropriate, for the established ones, to monitor the performance and assess the performance and impact of the deployed solutions regarding climate mitigation, adaptation and regeneration against a well-defined baseline at the start of the project;
- Contribution, as appropriate, to the implementation of the European Green Deal, the Climate-neutral and smart cities Mission (hereafter referred to as the Cities Mission), the Adaptation to climate change Mission (hereafter referred to as the Climate Mission), as well as other urban relevant policies and initiatives such as the Zero Pollution Action Plan, Biodiversity Strategy, Fit for 55 Strategy, EU Urban Mobility Framework, Water Framework Directive, Circular Economy Action Plan, European Urban Initiative, Urban Agenda for the EU, New Leipzig Charter, Europe's Digital Decade, the European partnership on Driving Urban Transitions for a sustainable future (DUT) and the New European Bauhaus Initiative.

Scope: Cities are at the forefront of tackling climate change and pollution and managing impacts through mitigation and adaptation measures. However, while in the last decade local and regional authorities gained a better understanding of the inter-related climate challenges and urgencies of their territories, less has been undertaken to effectively implement and assess climate mitigation and adaptation specific approaches and, in consequence, to adopt them into the local urban/regional policies, strategies and planning documentations, such as municipal/regional master planning, Urban Agendas, Sustainable Urban Mobility Plan (SUMP), Sustainable Energy and Climate Action Plan (SECAP), Sustainable Energy Action Plan (SEAP), smart specialisation strategies etc.

To meet the objectives of the European Green Deal, the Paris and Glasgow agreement and the UN (United Nations) Sustainable Development Goals, cities in close cooperation with their surrounding region, should engage in decisive actions to tackle the climate change, biodiversity and pollution imperatives and enhance their climate resilience.

It is widely acknowledged²³¹ that urban “greening” and renaturing approaches and solutions, if properly designed and maintained, can address simultaneously climate change mitigation and adaptation challenges by reducing GHG emissions and atmospheric concentrations, energy demands for e.g. mobility, wastewater treatment, heating and cooling. They can also contribute to significant regeneration and upgrading of built environment whilst delivering

²³⁰ Such as CIVITAS Impact and process evaluation framework, or the schemes developed by projects funded under the LC-CLA-11-2020: Innovative nature-based solutions for carbon neutral cities and improved air quality.

²³¹ Authoritative research indicates that nature-based solutions can provide over one-third of the cost-effective climate mitigation needed between now and 2030 to stabilize warming to below 2 °C (IPBES (2019): Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services).

multiple co-benefits in terms of biodiversity conservation and enhancement, cleaner air, water and soil, noise reduction, flood risks mitigation, public health and well-being.

The objective of this topic is to explore and demonstrate how to operationalize collaborative climate mitigation and adaptation urban planning approaches deploying “greening” and renaturing solutions for regeneration, re-purposing, rehabilitation and pollution abatement purposes. The co-created plans should be in line with the guiding principles of the European Green Deal and the New European Bauhaus initiative.

To this end, it invites for demonstration actions in at least four ‘lead’ cities accompanied by at least four ‘replicator’ cities, representing good geographical, climate and socio-economic diversity across Europe and situated each in a different Member State or Associated Country, where existent urban structure and fabric allow rehabilitation, regeneration, re-purposing or (re)conversion of areas such as large scale social housing districts, deprived districts and neighbourhoods, neglected or abandoned areas and brownfields, derelict industrial sites or dysfunctional urban places through greening and renaturing.

Actions are expected to:

- Set-up in each participating city collaborative platforms (such as living labs) depicting multi-level, and multi-disciplinary governance structures and engaging local authorities, citizens, stakeholders and relevant actors²³² and expertise²³³ for the co-design, testing and demonstration of co-created urban rehabilitation, regeneration, re-purposing or (re)conversion plans deploying greening and re-naturing approaches to foster more climate neutral, resilient, liveable, sustainable and functional cities with thriving nature, communities and economic activities;
- Ensure that the regional dimension concerning climate adaptation is properly accounted for through the continuous and seamless involvement of competent regional authorities responsible for the design and implementation of the regional climate mitigation and adaptation measures to ensure cross-scalar (city/region) compatibility and coherence of the urban/regional climate mitigation and adaptation plans.

Actions should also foresee assessment, quantitative and qualitative, ex-ante and ex-post, of the impact of combining and integrating different greening and re-naturing interventions and actions both at local and at regional level based on robust monitoring schemes and using, as appropriate, existing methodologies and indicators.

The ‘lead’ demonstration cities must, further to the development of the above mentioned plans, also foresee actual implementation of the co-created interventions during the life of the project. To this end, concrete implementation actions and associated costs should be described under a dedicated Work Package or a task.

²³² Such as infrastructure providers, knowledge institutions, planners, cultural and creative organizations, energy, mobility and climate agencies.

²³³ Such as planning, design, ICT sector, social sciences and humanities, behavioural and citizens sciences, gender, ecology etc.

The replicator/follower cities, under the proactive guidance and mentoring of the lead cities, should develop their co-created plans, measures and interventions with not obligation for their actual implementation during the life of the project.

To support the integrated planning process and facilitate involvement of citizens in the decision-making process, actions should make effective use of digital tools (e.g. digital twins) integrating cross-domain static, real time and historic data from observations, modelling and simulation whilst making use of open standards and technical specifications.

Actions should engage in clustering activities with other like-minded projects funded under this topic, other relevant projects²³⁴ and projects supported under the Climate-neutral and smart cities and Climate Adaption Missions to promote synergies and complementarities.

Although concrete actions for such activities would only be identified in an early stage in the projects' lifetime, appropriate provisions and resources enabling their implementation should be put aside at the proposal level in a clearly identifiable work package. Furthermore, actions should engage in ambitious outreach, communication, dissemination and training activities to foster replication, upscaling and up-taking of the projects' outputs beyond the projects consortia.

To maximise impacts, in carrying out these activities, actions are strongly recommended to work in coordination and complementarity with the 'Climate-neutral and smart cities' and the (soon to be established) 'Climate Adaptation' Mission Platforms. Opportunities for collaboration and synergies should also be explored and, as appropriate, pursued with other relevant initiatives, such as the European partnership on Driving Urban Transitions for a sustainable future (DUT), the upcoming European Urban Initiative of Cohesion Policy, the Urban Agenda for the EU²³⁵, the CSA project selected from the call HORIZON-MISS-2021-CIT-01-02, the Covenant of Mayors, the CIVITAS initiative, the Living-in.EU initiative and the New European Bauhaus Community and NEBLab.

Joint Call between Mission Restore our Ocean and Waters by 2030, Mission Adaptation to Climate Change and Mission A Soil Deal for Europe

This call is implemented jointly by Mission 'Adaptation to Climate Change', Mission 'Soil Deal for Europe' and Mission 'Restore our ocean and water by 2030' to ensure integrated approaches and explore synergies between these Missions. As such, the activities under this joint call will address the objectives and impacts of these three Missions, as stated in their respective introductory statements.

²³⁴ Such as the CSA project resulting from the call "HORIZON-CL6-2022-BIODIV-01-03: Network for nature: multi-stakeholder dialogue platform to promote nature-based solutions" and Horizon Europe relevant projects on nature-based solutions in cities under the call "HORIZON-CL6-2023-BIODIV: Stopping biodiversity loss and enhancing ecosystem services in urban and peri-urban areas.

²³⁵ More particularly, the Partnership for sustainable land use and nature-based solutions, and the resources the Partnership developed, on [Sustainable Land Use | Futurium \(europa.eu\)](#) as well as the upcoming Partnership on Greening of Cities, provided that the outcome of the ex-ante assessment concerning the plans to set up this Partnership will be positive.

Call - Demonstration of climate mitigation and resilience solutions in support of the implementation of the Adaptation to Climate Change, Restore our Ocean and Waters by 2030 and A Soil Deal for Europe Missions

HORIZON-MISS-2023-CLIMA-OCEAN-SOIL-01

Conditions for the Call

Indicative budget(s)²³⁶

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) ²³⁷	Indicative number of projects expected to be funded
		2023		
Opening: 17 Jan 2023 Deadline(s): 20 Sep 2023				
HORIZON-MISS-2023-CLIMA-OCEAN-SOIL-01-01	IA	15.00 ²³⁸	Around 15.00	1
Overall indicative budget		15.00		

General conditions relating to this call

<i>Admissibility conditions</i>	The conditions are described in General Annex A.
<i>Eligibility conditions</i>	The conditions are described in General Annex B.
<i>Financial and operational capacity and</i>	The criteria are described in General Annex

²³⁶ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

The Director-General responsible may delay the deadline(s) by up to two months.

All deadlines are at 17.00.00 Brussels local time.

The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

²³⁷ Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

²³⁸ Of which EUR 4.88 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.32 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 2.63 million from the 'Digital, Industry and Space' budget and EUR 0.31 million from the 'Civil Security for Society' budget and EUR 6.85 million from the 'Climate, Energy and Mobility' budget.

Horizon Europe - Work Programme 2023-2024
Missions

<i>exclusion</i>	C.
<i>Award criteria</i>	The criteria are described in General Annex D.
<i>Documents</i>	The documents are described in General Annex E.
<i>Procedure</i>	The procedure is described in General Annex F.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G.

This call is implemented jointly by Mission 'Adaptation to Climate Change', Mission 'Soil Deal for Europe' and Mission 'Restore our ocean and water by 2030' to ensure integrated approaches and explore synergies between these Missions. As such, the activities under this joint call will address the objectives and impacts of these two Missions, as stated in their respective introductory statements.

Proposals are invited against the following topic(s):

HORIZON-MISS-2023-CLIMA-OCEAN-SOIL-01-01: Mission Climate adaptation, Mission Ocean & waters and Mission Soil Deal for Europe – Joint demonstration of an integrated approach to increasing landscape water retention capacity at regional scale

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 15.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 15.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: In addition to the standard eligibility conditions, the consortium must carry out demonstration activities in 3 different Member States or Associated Countries, involving and including in the consortium partners from these respective countries. The following additional eligibility criteria apply: The proposals must use the multi-actor approach. See definition of the multi-actor approach in the introduction to this Work

	Programme part. If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Beneficiaries will be subject to the following additional obligations regarding open science practices. If projects collect in-situ data and marine observations, beneficiaries must make them openly available through the European Marine Observation and Data network (EMODnet), based on FAIR (findable, accessible, interoperable, reusable) principles. Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The financial support to third parties may only be awarded to local and/or regional authorities from an ‘associated region’. The maximum amount to be granted to each “associated region” is EUR 100,000, to showcase the feasibility, replicability and scalability of the solutions developed within the project in the “associated region”²³⁹. Each “associated region” may benefit from the Financial Support to Third Parties provided under this topic within the duration of the project only once.
<i>Exceptional page limits to proposals/applications</i>	The page limit of the application is 70 pages.

Expected Outcome: Project results are expected to contribute to all of the following expected outcomes:

- Demonstrated effective and inclusive integrated approaches to the management of landscape, soil, water and vegetation at a regional level, to increase the resilience to climate change impacts on soils, waters, habitats and biodiversity;

²³⁹ ‘Associated regions’ are understood as areas with similar ecosystems that can benefit from the demonstration activities (neighbouring regions and/or regions in a different river basin, including less-developed regions), which are selected with a view to building capacity to implement innovative solutions to manage landscape, water and soil in an integrated approach to restore ecosystems. Proposals should ensure that the associated regions are located in Member States/Associated Countries other than those that are part of the project consortium.

- Demonstrated effective nature-based solutions and ecological approaches to increase landscape water retention capacity, including soil water retention capacity;
- Demonstrated economic feasibility of these solutions, ensuring their long term sustainability;
- Enhanced implementation of the European Green Deal, the EU Adaptation Strategy, the EU Biodiversity Strategy, EU legislation for the protection of freshwaters (such as the EU Water Framework Directive and EU Groundwater Directive) and the EU Soil Strategy for 2030;
- Better information and greater mobilisation of all relevant actors, including citizens, local and regional authorities and planning bodies, farmers, foresters, land owners, business owners and economic operators, soil protection and management organisations, water management and planning bodies, for an effective and sustainable governance of soil, water and all other landscape components to achieve climate change resilience and increase water retention in the landscape.

Scope: This joint topic relates to the Adaptation to Climate Change Mission's third objective, aiming to support at least 75 full-scale deep demonstrations of climate resilience, to the Mission Ocean & Waters' objective 1, protect and restore marine and freshwater ecosystems and biodiversity, and objective 2, prevent and eliminate pollution of marine and freshwaters. The topic also relates to several specific objectives of the Mission "A Soil Deal for Europe", including to the objectives to reduce soil degradation and soil sealing and to prevent erosion. It also contributes to the objectives of the Water Framework Directive (WFD)²⁴⁰, including achieving Good Ecological and Chemical Status and restoration of aquatic ecosystems, and to the objectives of the Groundwater Directive as regards improvement of chemical status of ground waters.

Landscape water retention capacity is understood as the ability of water bodies, soils and other ecosystems to retain water after it has fallen as precipitation; it is fundamental for the protection of biological diversity as life depends on water. High landscape water retention capacity prevents accelerated surface run-off, increases water content in soils and surface and ground water availability for vegetation, improves the quantity and quality of groundwater and aquifer recharge, reduces soil erosion and nutrient run off into surface water bodies, and improves local micro-climate by reducing local air and biomass temperature. As such, it has the potential to prevent and mitigate impacts of extreme hydrological events such as floods and to act as a buffer against heat extremes. Permanent vegetation in a landscape, such as forest areas, wetlands and permanent grasslands, significantly improves water retention capacity.

Projects should demonstrate socio-ecological approaches and nature-based solutions to increase landscape and soil water retention capacity, leading to improvement of quality and quantity of ground and surface waters in the area where they are deployed, and boosting

²⁴⁰ https://ec.europa.eu/environment/water/water-framework/index_en.html

resilience to climate change impacts. A combination of nature-based measures with hybrid solutions and relevant Blue-Green engineering may be considered, provided these combined solutions are sustainable and provide adequate social and environmental safeguards.

The consortium must carry out demonstration activities in 3 different Member States or Associated Countries, involving and including in the consortium partners from these respective countries. Proposals under this topic should comprise full-scale demonstration of innovative solutions in real conditions of landscapes in the countries selected for demonstration activities²⁴¹, with specific impacts leading to a measurable increase of the resilience and adaptation capacity of the areas involved, whilst contributing to climate change mitigation, surface and ground water quality, soil health improvement and biodiversity protection and conservation. Applying a multi-actor approach, demonstrations should be carried out at the level of socio-ecological territorial units that are large enough to allow covering the different living and non-living systems (soil, water, vegetation and other biota, human communities, etc.) in a landscape and the complex web of relations among them (e.g. a region or a sea/river basin).

Planning, implementation and management of effective measures to increase landscape water retention capacity requires involvement of various stakeholders and their expertise, such as land, owners, spatial planning and other local and regional authorities, soil protection and management experts, water management and planning bodies, landscape planning experts, farmers and forest managers. Local authorities and local communities should be involved in the design and implementation of the solutions, to ensure that these are well suited for local needs and conditions and are “owned” by the local communities. Activities should, therefore, promote the involvement of local communities as well as the relevant authorities, to consider with them the impact of intended actions, and to co-create measures while taking local communities’ needs and values on board. The proposals should involve citizens, including where appropriate European volunteer/solidarity corps, and relevant citizen science activities.

The project(s) should also identify, create and disseminate best-practice examples for end-users (e.g. farmers and other land managers, decision-makers, water management authorities, landscape planners) to ensure landscape water retention capacity in the long term, including soil water retention capacity, with a view to boosting resilience to climate change, preventing biodiversity loss and promoting at the same time socio-economic transition processes in an ecosystem-based and circular economy perspective, and promote those best practices among the end users.

The demonstration sites established within the project(s) funded under this topic could qualify as “lighthouses”²⁴² in the sense of the Mission A Soil Deal for Europe if and when they comply with the criteria laid down in the Implementation Plan of that Mission.

²⁴¹ These could build on solutions studied e.g. under topic HORIZON-MISS-2022-CLIMA-01-05 “Boost the sponge function of landscape as a way to improve climate-resilience to water management challenges”, among others.

²⁴² “Lighthouses” are defined in the Implementation Plan of the Mission ‘Soil Deal for Europe’ as “places for demonstration of solutions, training and communication that are exemplary in their performance in

Proposals should both:

- Involve at least five “associated regions”²⁴³ as third parties, to showcase the feasibility, replicability and possibility to scale up the solutions developed. The consortium will proactively reach out to these associated regions to enable them to follow closely the project and its demonstration activities, transferring knowledge to them and technical assistance to build capacity and to implement integrated approaches for landscape, water and soil management to increase landscape water retention capacity in their territories; and
- Draw up an action plan and roadmap to replicate and scale up the solutions within the ‘associated regions’ and beyond them, to increase landscape water retention capacity, including soil water retention capacity.

As a mechanism to provide knowledge transfer and technical assistance to the associated regions, the selected project should provide support to third parties in the form of grants. The maximum amount of the envisaged Financial Support to Third Parties is EUR 100 000 per third party for the entire duration of the action. Proposals should outline the process for selection of the third parties to which financial support would be granted, based on the principles of transparency, objectivity and fairness.

The project(s) funded under this topic should address all the below points:

- Contribute to the networking and coordination activities and joint activities of the three Missions, including by establishing links with projects funded under Horizon 2020²⁴⁴, including the European Green Deal call, and under Horizon Europe, where they are relevant for climate adaptation and soil health knowledge and solutions;
- Include a mechanism and resources to establish links with the Implementation Support Platform of the Mission Ocean and Waters and build links with other activities of this Mission to maximize synergies;
- Include a mechanism and the resources to establish operational links with the Climate-ADAPT platform (run by the European Environment Agency (EEA) together with DG CLIMA) that will act as a central element for the monitoring, support and visualisation of the Adaptation to Climate Change Mission progress in European Regions. To this purpose, projects will feed their results to the Climate-ADAPT and EEA assessments

terms of soil health improvement”. They are local sites (one farm, one forest exploitation, one industrial site, one urban city green area, etc.) that can be included in a living lab area or be situated outside a living lab area.

²⁴³ ‘Associated regions’ are understood as areas with similar ecosystems that can benefit from the demonstration activities (neighbouring regions and/or regions in a different river basin, including less-developed regions), which are selected with a view to building capacity to implement innovative solutions to manage landscape, water and soil in an integrated approach to restore ecosystems. Proposals should ensure that the associated regions are located in Member States/Associated Countries other than those that are part of the project consortium.

²⁴⁴ See Cordis results packs LC-CLA-13-2020, at https://cordis.europa.eu/programme/id/H2020_LC-CLA-13-2020, and LC-CLA-2020 12a Advancing climate services | Programme | H2020 | CORDIS | European Commission (europa.eu)

and should include a mechanism to establish links with the Mission Adaptation to Climate Change Implementation Platform;

- Include a mechanism and resources to establish links with the Implementation Platform being established for the Mission A Soil Deal for Europe; and
- Support the Ocean and Water Knowledge System²⁴⁵ and the EU Soil Observatory²⁴⁶, in particular by contributing to knowledge creation and data collection.

Joint Call between Mission Restore our Ocean and Seas by 2030 and Mission A Soil Deal for Europe

This call is implemented jointly by Mission ‘Soil Deal for Europe’ and Mission ‘Restore our ocean and water by 2030’ to ensure integrated approaches and explore synergies between these Missions. As such, the activities under this joint call will address the objectives and impacts of these two Missions, as stated in their respective introductory statements.

Call - Mission Ocean & waters and Mission Soil Deal for Europe Joint demonstration of approaches and solutions to address nutrient pollution in the landscape-river-sea system in the Mediterranean sea basin

HORIZON-MISS-2023-OCEAN-SOIL-01

Conditions for the Call

Indicative budget(s)²⁴⁷

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million) ²⁴⁸	Indicative number of projects expected to be funded
		2023		
Opening: 17 Jan 2023 Deadline(s): 20 Sep 2023				

²⁴⁵ See the Implementation Plan of Mission Ocean & Waters, [Final outline implementation plans \(europa.eu\)](https://joint-research-centre.ec.europa.eu/eu-soil-observatory-euso_en)

²⁴⁶ https://joint-research-centre.ec.europa.eu/eu-soil-observatory-euso_en

²⁴⁷ The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

The Director-General responsible may delay the deadline(s) by up to two months.

All deadlines are at 17.00.00 Brussels local time.

The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

²⁴⁸ Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

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HORIZON-MISS-2023-OCEAN-SOIL-01-01	IA	16.00 ²⁴⁹	Around 8.00	2
Overall indicative budget		16.00		

General conditions relating to this call

<i>Admissibility conditions</i>	The conditions are described in General Annex A.
<i>Eligibility conditions</i>	The conditions are described in General Annex B.
<i>Financial and operational capacity and exclusion</i>	The criteria are described in General Annex C.
<i>Award criteria</i>	The criteria are described in General Annex D.
<i>Documents</i>	The documents are described in General Annex E.
<i>Procedure</i>	The procedure is described in General Annex F.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G.

Joint action between Mission Ocean, Seas and Waters and Mission A Soil Deal for Europe

This call is designed jointly by Mission “A Soil Deal for Europe” and Mission “Restore our ocean and waters by 2030” to ensure integrated approaches and synergies between the Missions. As such, activities under this joint call will address the objectives and impacts of these two Missions as stated in their respective introductory statements.

Proposals are invited against the following topic(s):

²⁴⁹ Of which EUR 6.95 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.33 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 2.72 million from the 'Digital, Industry and Space' budget and EUR 0.32 million from the 'Civil Security for Society' budget and EUR 5.67 million from the 'Climate, Energy and Mobility' budget.

HORIZON-MISS-2023-OCEAN-SOIL-01-01: Mission Ocean and Waters and Mission A Soil Deal for Europe – Joint demonstration of approaches and solutions to address nutrient pollution in the landscape-river-sea system in the Mediterranean sea basin

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 16.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: The Joint Research Centre (JRC) may participate as member of the consortium selected for funding. The following additional eligibility criteria apply: In addition to the standard eligibility conditions, the consortium must carry out demonstration activities in 3 different Member States or Associated Countries of the Mediterranean basin, involving and including partners from these respective countries in the consortium. If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.
<i>Legal and financial set-up of the Grant Agreements</i>	The rules are described in General Annex G. The following exceptions apply: Beneficiaries will be subject to the following additional obligations regarding open science practices: If projects collect in-situ data and marine observations, beneficiaries must make them openly available through the European Marine Observation and Data network (EMODnet), based on FAIR (findable, accessible, interoperable, reusable) principles. Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The financial support to third parties may only be

	awarded to local and/or regional authorities from an ‘associated region’. The maximum amount to be granted to each “associated region” is EUR 100,000, to showcase the feasibility, replicability and scalability of the solutions demonstrated within the project in the “associated region” ²⁵⁰ . Each “associated region” may benefit from the Financial Support to Third Parties provided under this topic within the duration of the project only once.
<i>Exceptional page limits to proposals/applications</i>	The page limit of the application is 70 pages.

Expected Outcome: This topic contributes to the implementation of the European Green Deal, the Farm to Fork Strategy, the Biodiversity Strategy for 2030, the Soil Strategy for 2030, the Bioeconomy Strategy and the EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'. It addresses the Mission ‘A Soil Deal for Europe’ specific objective 4 – reduce soil pollution and enhance restoration, targets T.4.2 – reducing fertiliser use by at least 20% and T.4.3 – reduce nutrient losses by at least 50%. It relates to the Mission Ocean and waters’ objective 2 – prevent, minimize and remediate pollution of marine and freshwater ecosystems, which has a focus on the Mediterranean Sea basin. It also contributes to the objectives of the Marine Strategy Framework Directive (MSFD) and the Water Framework Directive (WFD) - including in terms of Good Environmental Status and restoration of aquatic ecosystems - and the Marine Spatial Planning Directive (MSPD).

Project results are expected to contribute to all of the following expected outcomes:

- accelerated uptake of innovative, reproducible solutions to prevent, minimise and remediate soil and water pollution from excess nutrients (especially nitrogen and phosphorus) in the landscape-river catchment-sea system and transition waters in the Mediterranean Sea basin;
- accelerated uptake of innovative, reproducible solutions to reduce the use of fertilisers and to prevent, minimize and remediate nutrient pollution and reduce ocean and inland water eutrophication;
- foundations for future demonstration and upscaling activities on innovative solutions to prevent, minimise and remediate soil and water pollution from excess nutrients, and to reduce the use of fertilisers, in ‘associated regions’;
- empowerment of citizens to take action against pollution of soils, waters and the ocean.

²⁵⁰ ‘Associated regions’ are understood as areas with ecosystems that can benefit from the demonstration activities (e.g. neighbouring regions and/or regions in a different river basin) and/or less-developed regions, with the view to build capacity to implement the innovative solutions to reduce fertiliser use and to prevent, minimise and remediate pollution from excess nutrients. The proposals should ensure that the associated regions are located in Member States/Associated countries other than those that are part of the project consortium.

Scope: Soils are essential for all life-sustaining processes in our planet. If they are healthy and managed sustainably, they provide many benefits to people, nature and climate. However, 60-70% of soils in Europe are in an unhealthy condition²⁵¹. One of the reasons for poor soil health in Europe is the excess of nutrients (mainly nitrogen and phosphorus) due to an excess of fertiliser applications. The presence of nutrients in soil at concentrations higher than plant requirements not only reduces their capacity for providing their vital ecosystem services, but the nutrient runoff contaminates groundwater, streams, rivers, wetlands, lakes and seas, and increases the risk of water and ocean eutrophication.

Consequently, proposals should demonstrate scalable breakthrough innovations (technological, business, social and governance) in the landscape-river catchment-sea system, including coastal ecosystems, in the Mediterranean Sea basin addressing all following issues:

- Upstream prevention and reduction of nutrient (especially nitrogen and phosphorus) losses from soil, and of soil and water pollution from excess nutrients, such as through reduction in the use of traditional/mineral fertilisers and/or their sustainable substitution with bio-based fertilisers, improved nutrient retention in soil and slower release to crops, improved nutrient use efficiency, integrated landscape and soil management, reduction of nutrient losses from rural and urban communities;
- Prevention of entry of nutrients in river catchment areas and their reduction, for example through improved wastewater treatment, use of green filters and other measures for reducing the flow of nutrients through the river system and prevention and reduction of their entry into the estuary/sea;
- Measures to reduce/eliminate excess nutrients in/from the estuary/sea to reduce or eliminate the risk of eutrophication.

Proposed solutions for pollution prevention, elimination and remediation should not increase the level of anthropogenic air emissions or underwater noise. Proposed solutions should be in line with the EU taxonomy regulation²⁵² and delegated acts.

The consortium must carry out demonstration activities in 3 different Member States or Associated Countries of the Mediterranean basin, involving and including in the consortium partners from these respective countries. The demonstrations should be carried out at the level of territorial units, such as a rural area, an urban community, a region, a river basin or an estuary, to show effectiveness of the demonstrated solutions.

The demonstration of solutions should be fully adapted to the local conditions for reduction of use of fertilisers and of nutrient losses from soil, and they should take place in a real-life demonstrative context (e.g. actual farms and/or forests) with well-defined system boundaries. Demonstrations should also involve actual users of the solutions (e.g. land owners, soil

²⁵¹ EU Mission Soil Deal for Europe Implementation Plan, September 2021, https://ec.europa.eu/info/sites/default/files/research_and_innovation/funding/documents/soil_mission_implementation_plan_final_for_publication.pdf

²⁵² [EU taxonomy for sustainable activities | European Commission \(europa.eu\)](#).

managers, water managers, river management authorities, etc.). Proposals should ensure a balanced regional distribution of the demonstration sites, taking into account pedo-climatic conditions, topographic conditions, soil types, farming/forestry systems, soil water regimes, and include all relevant elements of the water system (ground waters, surface waters, streams, as well as, where relevant, coastal and estuarine waters).

In line with the impact-driven approach of the Missions, proposals are expected to work with and engage at least five ‘associated regions’²⁵³ to showcase in additional geographic areas the feasibility, replicability and potential for upscaling of the solutions developed within the projects. The funded projects should ensure that the associated regions are located in Member States/Associated countries other than those that are part of the project consortium. Regions located in European sea basins other than the Mediterranean Sea basin are eligible to be selected as associated regions, with a view to upscaling and deployment of the demonstrated solutions in other areas.

The consortia should proactively reach out to the associated regions to enable them to follow closely the project and its demonstration activities. The projects should continuously share their outcomes and knowledge with associated regions and may provide them with technical assistance to build capacity and to implement solutions to reduce fertiliser use and to prevent, minimise and remediate pollution of soil and water from excess nutrients in their territory. The technical assistance to the associated regions may include advice for the preparation of roadmaps, plans and projects to reduce fertiliser use and to prevent, minimise and remediate pollution from excess nutrients, to address possible barriers and show the feasibility of implementing innovative solutions.

As a mechanism to provide knowledge transfer and technical assistance to the associated regions, the selected projects may provide support to third parties in the form of grants. The maximum amount of the envisaged Financial Support to Third Parties is EUR 100 000 per third party for the entire duration of the action. Proposals should outline the selection process of the third parties to which financial support would be granted based on principles of transparency, objectivity and fairness. An associated region shall benefit from the Financial Support to Third Parties provided under this topic only once.

Proposals should:

- Ensure the involvement of different stakeholders with complementary expertise in different stages of the projects and take into account the needs of the stakeholders and users;
- Build upon existing knowledge and solutions and support the upscaling of successful solutions, including from beyond the EU, designed and developed in the frame of

²⁵³ ‘Associated regions’ are understood as areas with ecosystems that can benefit from the demonstration activities (e.g. neighbouring regions and/or in a different sea basin) and/or less-developed regions, with the view to build capacity to implement the innovative solutions to reduce fertiliser use and to prevent, minimise and remediate pollution from excess nutrients. The proposals should ensure that the associated regions are located in Member States/Associated countries other than those that are part of the project consortium.

projects funded by current and previous European and national programmes, in particular the European Union Framework Programmes for Research and Innovation (such as Horizon 2020);

- Include dedicated training and communication activities taking place in the demonstration sites, for dissemination and accelerated adoption by other potential users of the innovative solutions demonstrated in the project, as well as for citizen engagement and soil, water and ocean literacy improvement (including for advisory services);
- Include a mechanism and resources to establish links with the Implementation Support Platform of the Mission Ocean and Waters and the Implementation Platform of the Mission A Soil Deal for Europe; as appropriate, also link with other Missions' relevant initiatives.
- Include dedicated tasks and adequate resources for coordination measures, networking and joint activities with other relevant projects funded under Horizon 2020 and Horizon Europe, and in particular with the other project funded under this topic. These coordination measures, networking and joint activities could, for example, involve the organisation of and participation in joint workshops, the exchange of knowledge, the coordinated development and adoption of best practices, or joint communication activities.
- Collaborate with the JRC's EU Soil Observatory, in particular as regards interoperability, sustainability and longevity of data and knowledge; and
- Support the Ocean and Water Knowledge System, in particular by contributing to knowledge creation and data collection.

Potentially, projects financed under this topic could cooperate with future Living Labs and Lighthouses created under dedicated call topics from the Mission A Soil Deal for Europe and working in the area of reduction of fertiliser use and of soil pollution from excess nutrients. Moreover, the sites for demonstration of solutions for reduction of use of fertilizers as well as reduction of nutrient losses from soil established within the projects funded under this topic could themselves qualify to be considered as Lighthouses in the sense of the Mission A Soil Deal for Europe, if they comply with the criteria laid down in the Implementation Plan of that Mission²⁵⁴.

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https://ec.europa.eu/info/sites/default/files/research_and_innovation/funding/documents/soil_mission_implementation_plan_final_for_publication.pdf

Other Actions not subject to calls for proposals

Other budget implementation instruments

1. Commission expert groups: Mission Boards

Objectives and scope:

The Mission Boards experts, who have been appointed following the call for applications published in 2022²⁵⁵, provide advice, which supports the work of the European Commission in the implementation phase of five EU Missions for Horizon Europe.

The experts included in the Mission Boards are required to provide advice based on deep knowledge on fields corresponding to the implementation of mission oriented programmes corresponding to those of the missions above, including knowledge in business, economic social and environmental programmes, research and innovation and expertise in cross-sector/cross-border collaboration, governance, citizen engagement etc., as well as country and regional interests. It includes advice on achieving synergies between Horizon Europe missions and other EU programmes and policy areas, and with similar style missions at the national level, taking into account the international research and innovation field.

The advisory role of the Mission Boards is very closely managed in support of the dialogue with the Member States and countries associated to Horizon Europe, and prevent conflict of interest and respect confidentiality notably when pertaining to the Horizon Europe work programme and on evaluation aspects.

The Mission Boards provide high-level advice to the Commission of such a nature that without their input the implementation of missions would not achieve the desired large scale and breadth of impact. In light of this, and as highly qualified, specialised, independent experts who were selected following a public call for applications in 2022, on the basis of objective criteria, it is justified that the members of the Mission Boards are remunerated for the services they offer pursuant Article 21 of the Commission's horizontal rules on expert groups ('the horizontal rules')²⁵⁶.

A special allowance of EUR 450/day will be paid to the Mission Board experts appointed in their personal capacity who act independently and in the public interest. This amount is considered to be proportionate to the specific tasks to be assigned to the experts, including the number of meetings to be attended and possible preparatory work²⁵⁷.

Form of Funding: Other budget implementation instruments

Type of Action: Expert contract action

²⁵⁵ https://ec.europa.eu/info/news/commission-looking-top-experts-advise-eu-missions-2022-jan-05_en

²⁵⁶ C(2016) 3301

²⁵⁷ C(2016) 3301

Indicative timetable: 1st Quarter 2023 – 2nd Quarter 2023

Indicative budget: EUR 0.90 million from the 2023 budget²⁵⁸

2. Use of individual experts: Mission Board Chairs

Objectives and scope:

The Mission Boards Chairs (one Chair per Mission Board) have been appointed in 2022²⁵⁹ by the Director-General of DG RTD in agreement with other relevant Commission services, in order to maintain a degree of continuity with the previous Mission Boards. They are required to provide advice based on deep knowledge on fields corresponding to the implementation of mission oriented programmes corresponding to those of the missions above, including knowledge in business, economic social and environmental programmes, research and innovation and expertise in cross-sector/cross-border collaboration, governance, citizen engagement etc., as well as country and regional interests. It includes advice on achieving synergies between Horizon Europe missions and other EU programmes and policy areas, and with similar style missions at the national level, taking into account the international research and innovation field.

The Chairs support and coordinate the work of the Mission Boards. The Chairs are also in charge of steering the work of the Mission Board according to its specific mandate. The Mission Board Chairs do not have a decision-making or executive role.

The advisory role of the Chairs is very closely managed in support of the dialogue with the Member States and countries associated to Horizon Europe, and to respect conflict of interest and confidentiality notably when pertaining to the Horizon Europe work programme and on evaluation aspects.

The Mission Boards Chairs provide high-level advice to the Commission of such a nature that without their input the implementation of missions would not achieve the desired large scale and breadth of impact.

A special allowance of EUR 450/day will be paid to the experts appointed in their personal capacity who act independently and in the public interest.

Form of Funding: Other budget implementation instruments

Type of Action: Expert contract action

Indicative timetable: 1st Quarter 2023 – 2nd Quarter 2023

²⁵⁸ Of which EUR 0.23 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget, EUR 0.01 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget, EUR 0.10 million from the 'Digital, Industry and Space' budget, EUR 0.16 million from the 'Health' budget, EUR 0.38 million from the 'Climate, Energy and Mobility' budget, EUR 0.02 million from the 'Civil Security for Society' budget.

²⁵⁹ https://ec.europa.eu/info/news/commission-looking-top-experts-advise-eu-missions-2022-jan-05_en

Indicative budget: EUR 0.08 million from the 2023 budget²⁶⁰

3. Experts assisting with the monitoring of actions (grant agreement, grant decision, public procurement, financial instruments)

This action will support the use of appointed independent experts for the monitoring of running actions (grant agreement, grant decision, public procurement actions, financial instruments) funded under Horizon Europe and previous Framework Programmes for Research and Innovation, and where appropriate include ethics checks, as well as compliance checks regarding the Gender Equality Plan eligibility criterion.

Form of Funding: Other budget implementation instruments

Type of Action: Expert contract action

Indicative budget: EUR 0.36 million from the 2023 budget²⁶¹

Indirectly managed actions

1. European Solidarity Corps support to EU Missions

At the heart of the EU's missions approach is the rationale to drive systemic change. Missions will help deliver key EU policy priorities such as the European Green Deal, Europe's Beating Cancer Plan, NextGenerationEU, the EU Industrial Strategy and A Europe fit for the Digital Age, amongst others. With this is the need for connection with the public in general, to build confidence in a sustainable future for the EU and Associated Countries and with the younger generation in particular who will have to make their lives in this future.

Creating a connection between the EU missions and the European Solidarity Corps will help to deliver this systemic change. Young people across the EU and Associated Countries will be supported to take part in European Solidarity Corps projects involving volunteering activities and supporting the aims of the missions.

The Horizon Europe contribution will complement existing European Solidarity Corps actions referred to as "Volunteering projects" in the 2023 Work Programme of the European Solidarity Corps.

The action will comply with conditions laid down in Regulation (EU) No 2021/695²⁶² establishing the Horizon Europe Programme and will be implemented under the Volunteering

²⁶⁰ Of which EUR 0.02 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget, EUR 0.00 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget, EUR 0.01 million from the 'Digital, Industry and Space' budget, EUR 0.01 million from the 'Health' budget, EUR 0.00 million from the 'Civil Security for Society' budget, EUR 0.03 million from the 'Climate, Energy and Mobility' budget.

²⁶¹ Of which EUR 0.09 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget, EUR 0.00 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget, EUR 0.04 million from the 'Digital, Industry and Space' budget, EUR 0.07 million from the 'Health' budget, EUR 0.15 million from the 'Climate, Energy and Mobility' budget, EUR 0.01 million from the 'Civil Security for Society' budget.

Projects covered by the European Solidarity Corps general call for proposals 2023 with the necessary derogations to the Horizon Europe Regulation as set out below. The general call for proposals contains the European Solidarity Corps Programme Guide, which provides detailed information on the rules, procedures and criteria for the applicants and participants interested in developing projects under the Programme. The action will involve individual volunteering and/or activities by volunteering teams. Projects are expected to start in 2023, with individual deployments throughout the duration of the projects.

Grants awarded to the beneficiaries will take the form of unit costs contributions, except for exceptional costs, which will be funded based on actual costs. The use of the different forms of costs is authorised by Decision of 15/11/2021 authorising the use of lump sums, unit costs and flat-rate financing for volunteering and solidarity projects actions under the European Solidarity Corps²⁶³. The relevant unit costs and the applicable rates are published in the European Solidarity Corps Programme Guide 2023. The funding rate is up to 100% of the eligible costs.

The budget implementation tasks will be entrusted to the European Solidarity Corps National Agencies via the conclusion of Contribution Agreements under indirect management mode in accordance with Article 62(1)(c) of Financial Regulation (EU, Euratom) 2018/1046.

In order to take into account the nature and the objectives of this action, and to implement this action in line with the European Solidarity Corps general call for proposals 2023, the following exceptions to Horizon Europe Regulation apply:

- To be eligible for funding, applicant organisations must be established in a Member State or an associated country which have a national agency designated for the management of actions under the European Solidarity Corps. However, organisations established in third countries non-associated to the European Solidarity Corps may participate indirectly as project participants working together with project beneficiaries.
- Financial capacity of the applicants will be verified if the grant requested is greater than EUR 60 000;
- Proposals will not be evaluated on the basis of the excellence award criteria;
- Proposals will be evaluated by the evaluation committee appointed by the National Agencies, which may be supported by independent external experts;
- The period for informing all applicants of the outcome of the evaluation of their application is set at a maximum of six months, from the deadline from submission of proposals;
- The period for signing grant agreements with applicants is set at a maximum of nine months from the deadline from submission of proposals;

²⁶² <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0695&from=EN>
²⁶³ https://europa.eu/youth/solidarity/organisations/reference-documents-resources_en

- Eligible indirect costs will not exceed 7% of the total direct eligible costs;
- In-kind contributions will not be eligible;
- The risk associated with non-recovery of sums due by beneficiaries to the European Solidarity Corps National Agencies will not be covered by the Mutual insurance mechanism;
- Articles 38 to 41 of Horizon Europe Regulation concerning ownership and protection, exploitation and dissemination, transfer and licensing, and access rights will not apply to this action.

Legal entities:

European Solidarity Corps national agencies established in Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Germany, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Iceland, North Macedonia, Turkey, Liechtenstein.

Form of Funding: Indirectly managed actions

Type of Action: Indirectly managed action

Indicative timetable: Q4 2023 – Q4 2025

Indicative budget: EUR 16.53 million from the 2023 budget²⁶⁴

²⁶⁴ Of which EUR 4.15 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget, EUR 0.21 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget, EUR 1.89 million from the 'Digital, Industry and Space' budget, EUR 3.00 million from the 'Health' budget, EUR 0.28 million from the 'Civil Security for Society' budget, EUR 7.00 million from the 'Climate, Energy and Mobility' budget.

Budget²⁶⁵

	Budget line(s)	2023 Budget (EUR million)
Calls		
HORIZON-MISS-2023-CLIMA-01		82.81
	<i>from 01.020220</i>	1.89
	<i>from 01.020230</i>	1.81
	<i>from 01.020240</i>	15.42
	<i>from 01.020250</i>	54.82
	<i>from 01.020260</i>	8.87
HORIZON-MISS-2023-CANCER-01		110.68
	<i>from 01.020210</i>	104.82
	<i>from 01.020220</i>	2.46
	<i>from 01.020240</i>	3.40
HORIZON-MISS-2023-OCEAN-01		87.70
	<i>from 01.020220</i>	2.14
	<i>from 01.020230</i>	2.05
	<i>from 01.020240</i>	17.47
	<i>from 01.020250</i>	62.14
	<i>from 01.020260</i>	3.89
HORIZON-MISS-2023-CIT-01		70.00
	<i>from 01.020220</i>	0.94
	<i>from 01.020230</i>	0.90
	<i>from 01.020240</i>	7.63
	<i>from 01.020250</i>	57.15

²⁶⁵

The budget figures given in this table are rounded to two decimal places.
The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

**Horizon Europe - Work Programme 2023-2024
Missions**

	<i>from 01.020260</i>	3.38
HORIZON-MISS-2023-CIT-02		5.00
	<i>from 01.020220</i>	0.12
	<i>from 01.020230</i>	0.11
	<i>from 01.020240</i>	0.95
	<i>from 01.020250</i>	3.39
	<i>from 01.020260</i>	0.42
HORIZON-MISS-2023-SOIL-01		126.00
	<i>from 01.020220</i>	2.18
	<i>from 01.020230</i>	2.09
	<i>from 01.020240</i>	17.78
	<i>from 01.020260</i>	103.95
HORIZON-MISS-2023-CLIMA-CITIES-01		40.00
	<i>from 01.020220</i>	0.92
	<i>from 01.020230</i>	0.88
	<i>from 01.020240</i>	7.54
	<i>from 01.020250</i>	26.82
	<i>from 01.020260</i>	3.83
HORIZON-MISS-2023-CLIMA-OCEAN-SOIL-01		15.00
	<i>from 01.020220</i>	0.32
	<i>from 01.020230</i>	0.31
	<i>from 01.020240</i>	2.63
	<i>from 01.020250</i>	6.85
	<i>from 01.020260</i>	4.88
HORIZON-MISS-2023-OCEAN-SOIL-01		16.00
	<i>from 01.020220</i>	0.33
	<i>from 01.020230</i>	0.32

**Horizon Europe - Work Programme 2023-2024
Missions**

	<i>from 01.020240</i>	2.72
	<i>from 01.020250</i>	5.67
	<i>from 01.020260</i>	6.95
Other actions		
Specific grant agreement		See footnote ²⁶⁶
	<i>from 01.020220</i>	0.99
	<i>from 01.020230</i>	0.95
	<i>from 01.020240</i>	8.09
	<i>from 01.020250</i>	27.15
	<i>from 01.020260</i>	6.02
Expert contract action		See footnote ²⁶⁷
	<i>from 01.020210</i>	0.24
	<i>from 01.020220</i>	0.02
	<i>from 01.020230</i>	0.02
	<i>from 01.020240</i>	0.15
	<i>from 01.020250</i>	0.57
	<i>from 01.020260</i>	0.34
Indirectly managed action		See footnote ²⁶⁸
	<i>from 01.020210</i>	3.00

²⁶⁶ To which EUR 6.02 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.99 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 8.09 million from the 'Digital, Industry and Space' budget and EUR 27.15 million from the 'Climate, Energy and Mobility' budget and EUR 0.95 million from the 'Civil Security for Society' budget will be added making a total of EUR 43.20 million for these actions.

²⁶⁷ To which EUR 0.34 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.02 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 0.15 million from the 'Digital, Industry and Space' budget and EUR 0.24 million from the 'Health' budget and EUR 0.57 million from the 'Climate, Energy and Mobility' budget and EUR 0.02 million from the 'Civil Security for Society' budget will be added making a total of EUR 1.34 million for these actions.

²⁶⁸ To which EUR 4.15 million from the 'Food, Bioeconomy, Natural Resources, Agriculture and Environment' budget and EUR 0.21 million from the 'CULTURE, CREATIVITY and INCLUSIVE SOCIETY' budget and EUR 1.89 million from the 'Digital, Industry and Space' budget and EUR 3.00 million from the 'Health' budget and EUR 0.28 million from the 'Civil Security for Society' budget and EUR 7.00 million from the 'Climate, Energy and Mobility' budget will be added making a total of EUR 16.53 million for these actions.

Horizon Europe - Work Programme 2023-2024
Missions

	<i>from 01.020220</i>	<i>0.21</i>
	<i>from 01.020230</i>	<i>0.28</i>
	<i>from 01.020240</i>	<i>1.89</i>
	<i>from 01.020250</i>	<i>7.00</i>
	<i>from 01.020260</i>	<i>4.15</i>
Estimated total budget		614.26

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