

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL2-2021-DEMOCRACY-01-04
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	22 June 2021
Deadline date	07 October 2021 17:00:00 Brussels tim

HORIZON-CL2-2021-DEMOCRACY-01-04: Democratic politics in the EU's neighbourhood

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 2.00 and 3.00 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 9.90 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: Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.

Expected Outcome: Projects should contribute to at least two of the following expected outcomes:

- Comprehensive stocktaking of developments over the last decade, so that the European Union's democracy support efforts can both regain traction and be revamped where necessary.
- Development of an improved policy toolkit for supporting liberal democracy in the European Union's neighbourhood, paving the way for more stability and cooperation.
- Evidence base for the mid-term review of the implementation of the Action Plan for Human Rights and Democracy 2020-2024.
- Reflection on the European Union's aspiration and role in supporting democracy in its neighbourhood.

Scope: Since the EU Council conclusions of 2009, EU democracy support has evolved and has been fine-tuned, with advances and setbacks. Following the adoption of the EU strategic framework on human rights and democracy in 2012, the EU adopted three Action Plans¹ in order to implement its commitments and reach its goals. The current Action Plan covers years 2020-2024².

Despite the hopes raised by the ‘colour revolutions’ in Eastern Europe in the 2000s and the Arab Spring in 2011 as boosters of democratisation in the European neighbourhood, a more troubling reality persists: some democratic advances coexist with the continued persistence of authoritarian rule in Eastern Europe, the Middle East and North African countries. Research should assess the EU’s actual role in promoting democracy. It should examine the EU’s influence on political governance in the neighbourhood, its capacity to react and address potential gaps between the declared intentions, and the results and consequences of its democracy support policies. Critical reflection should facilitate understanding of the dynamics, including opposition to the EU’s democratic efforts in the neighbourhood. Such an overarching assessment should contribute to innovations in democratisation policies corresponding to the realities on the ground.

Proposals are expected to address some of the following points: To take stock of developments in democracy building or failure in the EU’s neighbourhood countries. Research should draw lessons as regards success factors and barriers (political, economic, social, cultural, etc.) in the different regional, national and supranational contexts. The role of third country actors like the United States of America, China, Russia and their impact on democratisation processes or the entrenchment of authoritarianism should be examined. Similarly, the interplay of security and stability considerations and democratisation support in the EU’s agenda and actions should be analysed. Proposals should also assess the mechanisms the EU uses to support political change, as well as examine the discourses and narratives it employs and the actors it targets. They are expected to collect reliable and comparable data on funding for democracy, human rights, gender equality, the rule of law and good governance support, in order to build an account of the outcomes of a decade’s efforts, and thus facilitate learning and improvement. International cooperation with partners from countries in the EU’s neighbourhood is strongly encouraged

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL2-2022-DEMOCRACY-01-09
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	20 January 2022
Deadline date	20 April 2022 17:00:00 Brussels time

¹ (2012-2014 ; 2015-2019 ; 2020-2024)

² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=JOIN:2020:5:FIN>

HORIZON-CL2-2022-DEMOCRACY-01-09: Global governance for a world in transition: Norms, institutions, actors

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 2.00 and 3.00 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 9.00 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: Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.

Expected Outcome: Projects should contribute to the both of following expected outcomes:

- Support the European Union’s role in leading the transformation and defence of multilateralism by identifying and analysing policy avenues for a more robust, democratic and effective global governance.
- Develop policy recommendations, institutional frames, toolboxes, narratives and methodologies for supporting action towards transnational democracy.

Scope: Political developments across the world over the last years have posed serious challenges to global multilateralism and its aspirations for global order, peace and cooperation. Even if the need for international collective action is greater than it has ever been (climate and digital transitions, rise of inequalities – including gender inequalities –, ageing and disabilities, migrations, health pandemics, information disorder), the obstacles it encounters are no less redoubtable. The emerging multipolar system is characterised by the prevalence of diverging, and often antagonistic, state preferences, outdated and often ill-equipped global governance institutional architecture, nationalist populism, unilateralist trends, the influence of multinational corporations, as well as neo-mercantilist conflicts.

The European Union has an important global role to play in terms of defending multilateralism, through its enhancement and transformation, as a crucial component of global governance. However, its capacity and influence in shaping globalisation are being shaken by major geopolitical factors, such as the rise of new or re-emerging powers (China, India, Russia) and the United States’ foreign policy shifts.

Taking stock of recent developments, research should propose ways of redesigning, renewing and re-invigorating global and European traditions of cooperation with a view to greater accountability, openness and legitimacy. This should include new reflections on the norms,

institutions and actors that can support a more robust and effective multilateralism, as well as a stocktaking and assessment of the modalities and possibilities of multileveled participation in cross-border governance, ranging from the local to the global level. Research should also account for differences between fields and areas of governance, corresponding to diverse levels and modalities of multilateral cooperation. It should analyse whether and how such differences may hamper the governance of intersecting global challenges, e.g. health and mobility in relation to the recent COVID-19 pandemic, sustainability and climate change, and propose ways forward.

Proposals are expected to address some of the following: to identify barriers and opportunities for re-invigorating and enhancing the formal legal and institutional architecture of the rules-based global system. They should analyse, through a mix of normative and empirical methodologies, ways to reinforce the institutions that work, ways to replace those that do not, and propose those that are missing, with the aim of spurring the transformation of global governance. Proposals should relate the capacity of the populist and nationalist actors to feed on sovereigntist claims and narratives about the challenges confronted by supranational integration projects. Comparative approaches at European and global levels should be developed, taking into consideration historical and cultural contexts. Research should identify new actors, norms and processes of participation and representation (such as the participation of local authorities, community-based organisations, trade unions, youth, women's rights and civil society organisations in general, or citizens themselves through digital means for instance), which can boost the legitimacy, transparency, representativeness and effectiveness of multilateral institutions. Interests and strategies of other international powers, such as the United States, China, India, Russia or of other regional groupings (e.g. Mercosur, ASEAN, African Union) in disseminating new collective norms for global governance, including the related relevant historical roots, should be analysed. Proposals should identify where these interests, strategies and norms are incompatible with EU values and long-term interests and recommend policy action for the European Union to counter them. They should reflect on the changing role of state sovereignty in times of globalisation and global governance and consider different ways of reconceptualising multilateralism in the emerging multipolar global system. International cooperation with partners from third countries of interest is encouraged in order to better achieve the expected outcomes.

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL2-2022-TRANSFORMATIONS-01-04
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	20 January 2022
Deadline date	20 April 2022 17:00:00 Brussels time

HORIZON-CL2-2022-TRANSFORMATIONS-01-04: Decision-making processes of (aspiring) migrants

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 2.00 and 3.00 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 9.00 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: Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.

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

- Enhance EU migration policy by shedding light on micro- and meso-level drivers of migration.
- Assess how far policies take into account behaviours of migrants when aiming at regulating migration.
- Show how migration decisions change along the journey, and at what stage policies are more likely to play a role in shaping migration outcomes.

Scope: Studies on macro-level determinants of migration have linked structural factors and a number of social processes to migration outcomes. However, there is a scarcity of research that considers the way in which meso-social and micro-individual levels interact with each other and with macro-level determinants, and play a role in shaping decisions to migrate, or not.

Proposals should develop analyses of decisions taken by individuals to stay in their place of origin (village, city, country and region) or to leave. They should therefore consider the individual micro-level of decision-making, and should also consider the timing of such decisions and the drivers of the aspiration to migrate or lack thereof. Proposals should also take into consideration individual perceptions of structural factors (e.g. socio-economic, political, climate-related) and the way in which they influence such decisions.

Proposals should also combine such micro-level analyses with meso-level considerations of the context in which such decisions are formed, with due attention for differences across socio-demographic characteristics (e.g. gender, age, education level, socioeconomic status, ethnicity). Research may take stock of the available literature on the role family households play in shaping decisions to migrate, but is encouraged to go beyond, looking at societal drivers including local,

regional and national politics and dynamics, events, narratives, histories and cultural and diaspora ties.

Proposals should also consider how decisions to migrate are dynamic and adapt to different contexts in time and place. In such sequence of decisions, different drivers of decision-making may intervene at the different phases of the migration cycles and journeys, which proposals should consider. Consideration should be given to the role played by the availability, or lack of, legal channels for migration, when opting for an irregular alternative, and the information available on such options. Proposals may also focus, where relevant, on the role of smuggling and trafficking networks and on past experiences and traditions of return migration.

The analyses developed should shed light on the capacity of migration policies to effectively shape and/or affect migration journeys, and at what stage this occurs or may occur. Analyses should also evaluate the extent to which policies implemented consider the behaviours of migrants. Projects are strongly encouraged to develop innovative and participatory methodologies, including behavioural approaches to studies of individual decision-making. International cooperation is strongly advised, in particular with African countries.

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL3-2022-DRS-01-05
Types of action	HORIZON Innovation Actions
Deadline model	single-stage
Opening date	30 June 2022
Deadline date	23 November 2022 17:00:00 Brussels time

HORIZON-CL3-2022-DRS-01-05: Improved impact forecasting and early warning systems supporting the rapid deployment of first responders in vulnerable areas

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.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 10.00 million. ³
<i>Type of Action</i>	Innovation Actions
<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>Due to the scope of this topic, legal entities established in all member states of the Africa Union are exceptionally eligible for Union funding.</p> <p>The following additional eligibility conditions apply:</p> <p>This topic requires a multidisciplinary consortium involving:</p> <ul style="list-style-type: none"> • representatives of scientific areas that are relevant for this topic; • as well as practitioners (first and second responder); • and representatives of local or regional management authorities, from at least 3 different EU Member States or Associated countries. <p>For all the participants above, applicants must fill in the table “Eligibility information about practitioners” in the application form with all the requested information, following the template provided in the submission IT tool.</p>

³ This budget is shared with topic HORIZON-CL3-2022-DRS-01-06

	If projects use satellite-based, positioning, navigation and/or related timing data and services, beneficiaries must make use of Galileo/EGNOS (other data and services may additionally be used). The use of Copernicus for earth observation is encouraged.
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 6-8 by the end of the project – see General Annex B.
<i>Procedure</i>	The procedure is described in General Annex F. The following exceptions apply: To ensure a balanced portfolio, grants will be awarded to applications not only in order of ranking but at least also to those that are the highest ranked within set topics, provided that the applications attain all thresholds.

Expected Outcome: Projects' results are expected to contribute at least three of the following outcomes:

- Comparison of measures and technologies to enhance the response capacity to extreme weather and geological events (including local measures and warning systems) affecting the security of people and assets.
- Adjustments of warning and response systems in the light of cross-disciplinary cooperation, involving planning authorities and first responders, to better manage the rapid deployment of first responders and communication to citizens in vulnerable areas in the case of extreme climate events or geological disasters.
- Timely operational forecasts of severe (short-term focus) extreme weather events (e.g. floods, hot waves, storms, storm surges) or geological hazards (e.g. volcanic eruption, earthquake, tsunami) to aid planning authorities, civil protection agencies and first responders in their decision-making.
- European-scale multi-hazard platform to facilitate the identification of expected natural hazards with great specificity in time and space and improve science communication for boosting interactions between scientists, general media and the public.
- Methodologies to integrate innovative state-of-the art early warning systems into existing tools for decision-making and situation reporting already used by civil protection authorities from international to local level.

Scope: Enhanced risk and crisis assessment and preparedness to natural hazards rely on tools using different types of data, information and forecasts (e.g. meteorological data, physical data related to geohazards and climate projections etc.) which may enable to anticipate the occurrence of disasters. Based on the legacy of existing solutions, in particular in the area of extreme weather events, further developments are required to compare impact forecasting and early warning approaches at international level. The aim of such comparisons would be to

design EU-wide decision-support and information systems supporting planning authorities and civil protection agencies in the rapid deployment of first responders and communication to citizens in vulnerable areas in the case of extreme climate events or geological disasters. This platform development might be prone to international cooperation, hence supporting the implementation of both EU policies and the UN Sendai Framework for Action. Innovation actions should improve measures and technologies that are needed to better plan for extreme climate events and geological disasters, reduce risks, as well as manage the immediate consequences of natural disasters, in particular regarding emergency responses. This should lead to sound and timely operational forecasts of severe (short-term focus) extreme weather events or geological hazards to aid planning authorities, civil protection agencies and first responders in their decision-making. Built up on developments from relevant H2020 projects, a European-scale multi-hazard platform should be designed, taking into account existing developments at EU level and available space information, in order to facilitate the identification of expected natural hazards with great specificity in time and space. The aim is to utilise largely existing capabilities and combine them into a single, user-friendly platform.

In order to achieve the expected outcomes, international cooperation is encouraged, in particular with vulnerable countries, e.g. African and South Mediterranean members of the [Union for the Mediterranean](#).

Where possible and relevant, synergy-building and clustering initiatives with successful proposals in the same area should be considered, including the organisation of international conferences in close coordination with the Community for European Research and Innovation for Security (CERIS) activities and/or other international events.

HORIZON-CL4-2021-RESILIENCE-01-05: Building EU-Africa partnerships on sustainable raw materials value chains (CSA)

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 8.00 million.
<i>Type of Action</i>	Coordination and Support Actions
<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.</p> <p>In order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, or security, namely ensuring a diversified, secure, responsible and sustainable supply of raw materials, in particular critical raw materials, to enhance EU open strategic autonomy and strategic security, and to enable the green and digital transitions of EU industrial value chains and strategic sectors, participation to the topic is limited to legal entities established in Member States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community.</p> <p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p> <p>Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.</p>

Expected Outcome: Projects outcomes will enable achieving the expected impacts of the destination by increasing access to primary and secondary raw materials, in particular critical raw materials for EU industrial value chains and strategic sectors.

Projects are expected to contribute to the following outcomes:

- Steer the development of strategic partnerships for EU-Africa industrial value chains' integration, covering exploration, extraction, mineral processing, refining and recycling (if refining capacity is in place);

- Improve sustainability (especially environmental and social aspects) in the mining and metal recycling sectors in Africa, including its impacts on biodiversity;
- Contribute to eradicating illegal and ethically doubtful supply chains and activities;
- Develop knowledge on raw materials potential in Africa that will facilitate investment and business decisions;
- Reduce EU vulnerabilities in raw materials sourcing;
- Diversify EU supply chains from third countries for raw materials, especially for critical raw materials;
- Contribute to connecting different stakeholders of raw materials value chains, including final users.

In order to achieve the expected outcomes, international cooperation with partners established in Africa is strongly encouraged.

Dissemination and exploitation of projects outputs is tailored for EU and African organisations and industry dealing with raw materials.

The project should consider the findings and explore synergies with previous and ongoing EU funded projects for Africa and existing trustworthy EU and international initiatives, covering raw materials value chains.

The action is expected to contribute to the implementation of the following actions of the EU action plan on Critical raw materials:⁴

- Promote responsible mining practices through the EU's international cooperation programmes, in particular those related to the sustainable development of the informal sector (Artisanal and Small Scale Mining), which has become of strategic relevance in this field;
- Strengthen the local governance and business environment, together with other institutions and development partners (EITI, OECD, UNDP, WB, and Germany's GIZ). The focus should be on supporting the informal sector, and to promote and disseminate responsible business practices.
- Develop strategic international partnerships to secure a diversified supply of sustainable critical raw materials, starting with pilot partnerships with Canada, interested countries in Africa and the EU's neighbourhood in 2021.

Scope: Actions should include:

⁴ COM (2020) 474

- An in-depth analysis of critical raw materials potential in Africa and existing processing and refining capacities;
- Mapping and assessing investment opportunities in strategic raw materials value chains in Africa, considering factors as existing potential, availability of infrastructures, good governance and regulatory issues;
- Developing new business models to integrate EU and Africa raw materials value chains, considering horizontal and vertical integration;
- Developing a strategy for integration for EU and Africa value chains for the energy and digital transition;
- Building an EU and Africa business networking with upstream and downstream companies;
- Carrying out an in-depth analysis on financial instruments and investment funds and loans available at member state, EU and international levels for the Africa region.
- Developing in-depth case studies, addressing the above listed actions but not limited to it, for at least six African countries, including DRC, Senegal, Zimbabwe, Mozambique, Gabon and Namibia.

All the data and information generated through these actions should be shared in open formats on a free of charge basis with the European Commission, for its own use and for publication.

Public authorities and civil society organisations should participate actively in project activities to ensure that the processes and outcomes of the R&I align with the needs, values, expectations of society and, when social change, new social practices, social ownership or market uptake are required, social innovation should be encouraged.

Proposals should take into account issues of accessibility and inclusivity, such as age, gender, disability, and socio-economic background.

HORIZON-CL4-2021-TWIN-TRANSITION-01-20: Reducing environmental footprint, improving circularity in extractive and processing value chains (IA)

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>	Innovation Actions

<p><i>Eligibility conditions</i></p>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>In order to achieve the expected outcomes, and safeguard the Union’s strategic assets, interests, autonomy, or security, namely to increase EU resilience in raw materials supply chains for EU industrial value chains and strategic sectors to enable their green and digital transition and to reduce dependence of extractive activities on carbon-related energy sources and process emissions, participation to the topic is limited to legal entities established in Member States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community.</p> <p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p> <p>Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.</p>
<p><i>Technology Readiness Level</i></p>	<p>Activities are expected to start at TRL 5 and achieve TRL 7 by the end of the project – see General Annex B.</p>

Expected Outcome: Projects outcomes will enable achieving the expected impacts of the destination by increasing access to primary raw materials and secondary raw materials, in particular critical raw materials for EU industrial value chains and strategic sectors.

Projects are expected to contribute to the following outcomes:

- Reduce environmental impact of extractive and processing value chains;
- Develop demonstrators and pilot plants with a lower environmental impact;
- Reduce environmental footprint and increase circularity of extractive and processing value chains; and, where relevant, reduce contaminants and impurities in extracted raw materials;
- Develop methods, technologies and processes for mining and processing aiming at significantly decreased emissions (CO₂ and other emissions);
- Significantly increase resource and energy efficiency, and increased circularity of raw materials together with increased valorisation of extractive waste;
- Contribute to meeting the goals of climate neutrality, circularity, zero pollution and system protection, sustainable use and restorations as spelled out in the European Green Deal.

Actions are expected to contribute to the implementation of the following actions of the EU action plan on Critical Raw Materials⁵:

- Use Horizon Europe funding for research into mining processes with minimal impact on the environment and life-cycle assessment;
- Support waste and extractive waste valorisation and energy efficiency through cross-sectoral cooperation and industrial symbiosis, involving the mining industry.

Scope: Actions should develop sustainable solutions to reduce dependence of extractive activities on carbon-related energy sources and process emissions. They should also address reducing materials use, water and waste valorisation at all stages of the extractive and processing cycle.

Actions should facilitate the market uptake of solutions developed through industrially- and user-driven multidisciplinary consortia covering the relevant value chain and should consider standardisation aspects when relevant.

Actions should justify the relevance of selected pilot demonstrations in different locations within the EU (and also outside if there is a clear added value for the EU economy, industry and society).

Actions should facilitate the market uptake of solutions developed through industrially- and user-driven multidisciplinary consortia covering the relevant value chain and should consider standardisation aspects when relevant.

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the introduction to this Destination. For TRLs 6-7, a credible strategy to achieve future full-scale manufacturing in the EU is expected, indicating the commitments of the industrial partners after the end of the project.

Actions should envisage clustering activities with other relevant selected projects for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end proposals should foresee a dedicated work package and/or task, and earmark the appropriate resources accordingly.

Actions should also contribute to improving the awareness of relevant external stakeholders and the general public across the EU and in non-EU countries of project's partners about the importance of raw materials for society, the challenges related to their supply within the EU and about proposed solutions which could help to improve society's acceptance of and trust in sustainable raw materials production in the EU.

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

⁵ COM (2020) 474

HORIZON-CL4-2021-RESILIENCE-01-03: Identifying future availability of secondary raw materials (RIA)

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 13.50 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 13.50 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>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).</p> <p>In order to achieve the expected outcomes, and safeguard the Union’s strategic assets, interests, autonomy, or security, namely to increase EU resilience in raw materials supply chains for EU industrial value chains and strategic sectors to enable their green and digital transition and to reduce current EU over-dependence on a few third countries for critical raw materials by boosting domestic production of primary and secondary raw materials, participation to the topic is limited to legal entities established in Member States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community.</p> <p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p> <p>Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.</p>
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 3-5 by the end of the project – see General Annex B.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Improve knowledge base of EU and third country secondary raw materials (potential, resource estimation, production and refining);

- Promote the utilisation of specifications of the United Nations Framework Classification for Resources (UNFC) to Anthropogenic Resources approved in 2018⁶;
- Facilitate and accelerate commercial exploitation development of EU secondary resource recovery projects EU;
- Support identification of the key factors, including socio-economic factors, drivers and barriers affecting development of a recovery project, and enable comparison of different options and projects;
- Develop reports on future trends in raw materials markets. The trends should be linked with change of demand related to the transition to a low-carbon and circular economy;
- Facilitate identification of supply and demand bottlenecks of future secondary raw materials supply;
- Dissemination and exploitation of projects outputs is tailored for EU institutions, Member States and industry dealing with raw materials;

The action is expected to contribute to the implementation of the following actions of the EU action plan on Critical raw materials:⁷

- Develop the EU raw materials intelligence, strategic planning and foresight capacity by 2022;
- Map the potential supply of secondary raw materials from waste and stock in the EU including its regions and help identify viable recovery project for funding by 2022.

Scope: A successful transition to a climate-neutral, circular and digitised EU economy relies heavily on a secure supply of raw materials. In order to strengthen EU autonomy and reduce over-dependency, we must boost domestic sourcing, both for primary and secondary raw materials.

The action should be based on a common understanding of relevant terms and codes, and develop an understanding of anthropogenic resources and derive the needed aspects for classification of recovery projects and to develop criteria for a transparent, consistent and objective classification, needed to establish a comprehensive resource classification approach.

The action should acquire new data on secondary raw materials via in situ sampling, collect existing data and present in a harmonised UNFC format. The action should build on and advance further the work of UNECE – UNFC expert group on Anthropogenic resources regarding the classification of secondary raw materials and the work of H2020 project

⁶ <https://www.unece.org/energy/welcome/areas-of-work/unfc-and-sustainable-resource-management/applications/unfc-and-anthropogenic-resources.html>

⁷ COM (2020) 474

PROSUM⁸ regarding collection of data and information on secondary raw materials. The action should develop a proposal for EU statistics for secondary raw materials.

The action should focus on the following streams of secondary raw materials, with particular attention to critical raw materials: waste batteries, WEEE, mining waste, slags and ashes, and construction and demolition waste.

All the data and information generated through these actions should be shared in open formats on a free of charge basis with the European Commission, for its own use and for publication.

The action should envisage clustering activities with other relevant selected projects for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end proposals should foresee a dedicated work package and/or task, and earmark the appropriate resources accordingly.

The action should also contribute to improving the awareness of relevant external stakeholders and the general public across the EU and in non-EU countries of project's partners about the importance of raw materials for society, the challenges related to their supply within the EU and about proposed solutions which could help to improve society's acceptance of and trust in sustainable raw materials production in the EU.

Proposals should take into account issues of accessibility and inclusivity, such as age, gender, disability, and socio-economic background.

HORIZON-CL4-2021-RESILIENCE-01-04: Developing climate-neutral and circular raw materials (IA)

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>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply: In order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, or security, namely to increase EU

⁸ <http://www.prosumproject.eu/>

	<p>resilience in raw materials supply chains for EU industrial value chains and strategic sectors to enable their green and digital transition and to reduce current EU over-dependence on a few third countries for critical raw materials by boosting domestic production of secondary raw materials, participation to the topic is limited to legal entities established in Member States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community</p> <p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p> <p>Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.</p>
<p><i>Technology Readiness Level</i></p>	<p>Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.</p>

Expected Outcome: Projects outcomes will enable achieving the expected impacts of the destination by providing advanced solutions for resource efficiency, effective reuse and recycling of secondary raw materials, for EU industrial value chains and strategic sectors.

Projects are expected to contribute to the following outcomes:

- Scale up promising raw materials recycling from end-of-life products technologies and urban mines, including efficient sorting technologies for separation and recycling.
- Develop demonstration pilot showing that raw materials can be produced in an innovative and sustainable way in order to make sure that research and innovation end up on the market,
- Strengthen the competitiveness of the EU raw materials industries, contribute to ambitious energy and climate targets for 2030, minimise environmental impacts and risks, maximise circularity or resources and gain the trust of EU citizens in the raw materials sector.

Scope: Securing the sustainable access to raw materials, including metals, industrial minerals, wood- and rubber-based, construction and forest-based raw materials, and particularly Critical Raw Materials (CRM), is of high importance for the EU economy. Complex primary and secondary resources contain many different raw materials. Their processing, reuse, recycling and recovery schemes are complex and imply different steps, ranging from collection, logistics, sorting and separation to cleaning, refining and purification of materials.

Actions should develop and demonstrate innovative pilots for the clean and sustainable production of non-energy, non-agricultural raw materials in the EU from end-of-life products, targeting at least one of the following: waste electrical and electronic equipment (WEEE), batteries, wood-based panels, multi-material paper packaging, end-of-life tyres finishing at Technology Readiness Levels (TRL) 6-7.

Actions should facilitate the market uptake of solutions developed through industrially- and user-driven multidisciplinary consortia covering the relevant value chain and should consider standardisation aspects when relevant. The action should also include the analysis of financial opportunities ensuring the market exploitation and replication of the circular business model behind the developed solutions as new processes, products and/or services.

Actions should justify importance of targeted raw materials and the relevance of selected pilot demonstrations in different locations within the EU (and also outside if there is a clear added value for the EU economy, industry and society).

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the introduction to this Destination. For TRLs 6-7, a credible strategy to achieve future full-scale manufacturing in the EU is expected, indicating the commitments of the industrial partners after the end of the project.

Actions should also contribute to improving the awareness of relevant external stakeholders and the general public across the EU about the importance of raw materials for society, the challenges related to their supply within the EU and about proposed solutions which could help to improve society's acceptance of and trust in sustainable raw materials production in the EU.

Actions should also cover social, economic and environmental impacts of recovering value from secondary raw materials in comparison to primary raw materials, making focus on the entire process chain.

Actions should envisage clustering activities with other relevant selected projects for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end proposals should foresee a dedicated work package and/or task, and earmark the appropriate resources accordingly.

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

HORIZON-CL4-2021-RESILIENCE-01-05: Building EU-Africa partnerships on sustainable raw materials value chains (CSA)

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 8.00 million.
<i>Type of Action</i>	Coordination and Support Actions

<p><i>Eligibility conditions</i></p>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.</p> <p>In order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, or security, namely ensuring a diversified, secure, responsible and sustainable supply of raw materials, in particular critical raw materials, to enhance EU open strategic autonomy and strategic security, and to enable the green and digital transitions of EU industrial value chains and strategic sectors, participation to the topic is limited to legal entities established in Member States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community.</p> <p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p> <p>Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.</p>
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Expected Outcome: Projects outcomes will enable achieving the expected impacts of the destination by increasing access to primary and secondary raw materials, in particular critical raw materials for EU industrial value chains and strategic sectors.

Projects are expected to contribute to the following outcomes:

- Steer the development of strategic partnerships for EU-Africa industrial value chains' integration, covering exploration, extraction, mineral processing, refining and recycling (if refining capacity is in place);
- Improve sustainability (especially environmental and social aspects) in the mining and metal recycling sectors in Africa, including its impacts on biodiversity;
- Contribute to eradicating illegal and ethically doubtful supply chains and activities;
- Develop knowledge on raw materials potential in Africa that will facilitate investment and business decisions;
- Reduce EU vulnerabilities in raw materials sourcing;
- Diversify EU supply chains from third countries for raw materials, especially for critical raw materials;
- Contribute to connecting different stakeholders of raw materials value chains, including final users.

In order to achieve the expected outcomes, international cooperation with partners established in Africa is strongly encouraged.

Dissemination and exploitation of projects outputs is tailored for EU and African organisations and industry dealing with raw materials.

The project should consider the findings and explore synergies with previous and ongoing EU funded projects for Africa and existing trustworthy EU and international initiatives, covering raw materials value chains.

The action is expected to contribute to the implementation of the following actions of the EU action plan on Critical raw materials:⁹

- Promote responsible mining practices through the EU's international cooperation programmes, in particular those related to the sustainable development of the informal sector (Artisanal and Small Scale Mining), which has become of strategic relevance in this field;
- Strengthen the local governance and business environment, together with other institutions and development partners (EITI, OECD, UNDP, WB, and Germany's GIZ). The focus should be on supporting the informal sector, and to promote and disseminate responsible business practices.
- Develop strategic international partnerships to secure a diversified supply of sustainable critical raw materials, starting with pilot partnerships with Canada, interested countries in Africa and the EU's neighbourhood in 2021.

Scope: Actions should include:

- An in-depth analysis of critical raw materials potential in Africa and existing processing and refining capacities;
- Mapping and assessing investment opportunities in strategic raw materials value chains in Africa, considering factors as existing potential, availability of infrastructures, good governance and regulatory issues;
- Developing new business models to integrate EU and Africa raw materials value chains, considering horizontal and vertical integration;
- Developing a strategy for integration for EU and Africa value chains for the energy and digital transition;
- Building an EU and Africa business networking with upstream and downstream companies;

⁹ COM (2020) 474

- Carrying out an in-depth analysis on financial instruments and investment funds and loans available at member state, EU and international levels for the Africa region.
- Developing in-depth case studies, addressing the above listed actions but not limited to it, for at least six African countries, including DRC, Senegal, Zimbabwe, Mozambique, Gabon and Namibia.

All the data and information generated through these actions should be shared in open formats on a free of charge basis with the European Commission, for its own use and for publication.

Public authorities and civil society organisations should participate actively in project activities to ensure that the processes and outcomes of the R&I align with the needs, values, expectations of society and, when social change, new social practices, social ownership or market uptake are required, social innovation should be encouraged.

Proposals should take into account issues of accessibility and inclusivity, such as age, gender, disability, and socio-economic background.

HORIZON-CL4-2021-RESILIENCE-01-06: Innovation for responsible EU sourcing of primary raw materials, the foundation of the Green Deal (RIA)

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 7.50 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 30.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>In order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, or security, namely to increase EU resilience in raw materials supply chains for EU industrial value chains and strategic sectors to enable their green and digital transition and to reduce current EU over-dependence on a few third countries for critical raw materials by boosting domestic production of primary raw materials, and to strengthen EU autonomy as well as socially and environmentally acceptable sourcing, participation to the topic is limited to legal entities established in Member States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community.</p>

	<p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p> <p>Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.</p>
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 3-5 by the end of the project – see General Annex B.

Expected Outcome: Projects will enable achieving the expected impacts of the destination by increasing access to primary raw materials, in particular critical raw materials for EU industrial value chains and strategic sectors.

Projects are expected to contribute to the following outcomes:

- Improve knowledge base of EU and third country critical raw materials to identify new areas for exploration and resource estimation;
- Promote the utilisation of UNFC (United Nations Framework Classification for Resources) and UNRMS (United Nations Resource Management System) reporting standards in the raw materials sector;
- Accelerate development of EU domestic raw materials exploration projects integrating innovative technologies that can form the basis for new EU SMEs;
- Strengthen EU autonomy and ethical sourcing of raw materials by developing socially and environmentally acceptable means of discovery and production of primary critical raw materials.

The action is expected to contribute with intelligence and foresight capability to the implementation of the EU action plan on Critical raw materials¹⁰ and to support future foresight work of the Commission related to raw materials.

Scope: Actions should develop new knowledge and conceptual models, supported by innovative technologies to strengthen and secure the EU's supply of primary raw materials by:

- Generating better geological understanding (i.e. characterization, modelling, mapping) of known mineral deposits to identify critical minerals resources and inform discovery of new resources
- Developing new genetic models for ore deposit types that host critical minerals in order to identify areas for exploration, especially in previously overlooked regions
- Deploying innovative geological, geophysical, geochemical, and data analysis approaches including modelling techniques (e.g. data analysis, remote sensing) to elucidate the

¹⁰ COM (2020) 474

geological history and structure and models of targeted spatial areas of targeted areas and to guide more environmentally friendly exploration for critical minerals, limiting impacts on biodiversity.

Actions should also map EU and third countries' primary and secondary raw materials potential and raw materials production and refining capacities in a harmonised form, using UNFC (United Nations Framework Classification for Resources) and UNRMS (United Nations Resource Management System).

Actions should also contribute to improving the awareness of the general public across the EU about:

- the importance of raw materials for a successful transition to a climate-neutral and digitised economy and society; and
- the ensuing need for a secure, sustainable, and responsibly-sourced supply of raw materials, including from domestic sources to strengthen EU open strategic autonomy and reduce over-dependence on third countries.

All the data and information generated through these actions should be shared in open formats on a free of charge basis with the European Commission, for its own use and for publication.

Actions should envisage clustering activities with other relevant selected projects for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end proposals should foresee a dedicated work package and/or task, and earmark the appropriate resources accordingly.

Proposals should take into account issues of accessibility and inclusivity, such as age, gender, disability, and socio-economic background.

HORIZON-CL4-2021-RESILIENCE-01-07: Building innovative value chains from raw materials to sustainable products (IA)

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>	Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply:

	<p>In order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, or security, namely to increase EU resilience in raw materials supply chains for EU industrial value chains and strategic sectors to enable their green and digital transition and to reduce current EU over-dependence on a few third countries for critical raw materials by boosting domestic production of primary raw materials, to strengthen EU autonomy and to build innovative value chains linking directly raw materials producers and end-users, participation to the topic is limited to legal entities established in Member States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community.</p> <p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p> <p>Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.</p>
<p><i>Technology Readiness Level</i></p>	<p>Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.</p>

Expected Outcome: Projects will enable achieving the expected impacts of the destination by increasing access to primary raw materials, in particular critical raw materials for EU industrial value chains and strategic sectors.

Projects are expected to contribute to the following outcomes:

- Develop resilient and sustainable critical raw materials supply chains for the e-mobility and renewable energy ecosystems and strategic sectors, such as aerospace, ICT and dual-use applications;
- Increase the EU raw materials supply capability and added value;
- Create new market opportunities for mineral raw materials sustainably produced in the EU;
- Build innovative value chains establishing a direct link between the raw materials producers and the end-users.
- Create new circular business models with a convincing and quantified socio-economic impact.

Scope: Actions should develop innovative and sustainable technology and business solutions finishing at the level of Technology Readiness Levels (TRL) 6-7 for new high value added and sustainable products with enhanced functional properties based on the EU produced raw materials. The industrially- and user-driven multidisciplinary consortia should cover industry

players along the relevant value chains starting from raw materials to products. The focus is on raw materials necessary for the e-mobility and renewable energy ecosystems including battery raw materials; strategic sectors, such as aero-space and dual-use applications; or on critical raw materials¹¹, such as rare earths elements for highly performant permanent magnets.

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the introduction to this Destination. For TRLs 6-7, a credible strategy to achieve future full-scale manufacturing in the EU is expected, indicating the commitments of the industrial partners after the end of the project.

Actions should also contribute to improving the awareness of relevant external stakeholders and the general public across the EU about the importance of raw materials for society, the challenges related to their supply within the EU and about proposed solutions which could help to improve society's acceptance of and trust in sustainable raw materials production in the EU.

Proposals should take into account issues of accessibility and inclusivity, such as age, gender, disability, and socio-economic background.

HORIZON-CL4-2022-RESILIENCE-01-05: Technological solutions for tracking raw material flows in complex supply chains (RIA)

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 13.50 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 13.50 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: In order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, or security, namely to increase EU resilience in raw materials supply chains for EU industrial value chains and strategic sectors to enable their green and digital transition and to reduce current EU over-dependence on a few third countries for critical raw materials by increasing sustainable and responsible sourcing of primary and secondary raw materials and by using technological solutions to improve supply chain data transparency and traceability, participation to the topic is limited to legal entities established in Member

¹¹ Reference to the list of CRMs2020COM (2020) 474 final

	<p>States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community.</p> <p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p> <p>Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.</p>
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 3-5 by the end of the project – see General Annex B.

Expected Outcome: Projects outcomes will enable achieving the expected impacts of the destination by increasing access to primary raw and secondary raw materials, in particular critical raw materials for EU industrial value chains and strategic sectors.

Projects are expected to contribute to the following outcomes:

- Improve supply chain data transparency and traceability;
- Set up technological solutions for tracking raw material flows (material passports);
- Identify and address gaps in due diligence;
- Develop comparable criteria, reporting and audit approaches;
- Sustainable sourcing of raw materials;
- Contribute to the implementation of the following actions of the EU Action Plan on Critical Raw Materials: Action 4 - Map the potential supply of secondary critical raw materials from EU stocks and wastes and identify viable recovery projects.¹²

Scope: There is a need to improve supply chain data transparency and traceability, enabling consumers and downstream producers to have information about the origins of metals in finished products. In order to achieve the expected outcomes, it is advised to involve industrial users from the downstream side. Due diligence has numerous research gaps in this area which need to be addressed in order to limit complexity and enable a level playing field for responsible sourcing of minerals.

This action should close those gaps by the setting up of technological solutions for tracking raw material flows (material passports), building upon comparable criteria, reporting and audit approaches. Examples would include transparency in payments and traceability from beginning to end of the supply chain, through a chain of custody certification, and the use of block chain technology in an effort to improve supply chain transparency and traceability.

¹² COM (2020) 474

The action should build on the experience of existing EU projects on international responsible sourcing and contribute to strengthening responsible sourcing agenda.

It is foreseen that this will facilitate responsible sourcing in complex supply chains and put companies downstream in the supply chain in a better position to influence companies upstream.

The proposal should build on the state of the art in sustainable raw materials traceability with regard to sustainability certification schemes, standards and initiatives as well as block chain technology. The proposal should also build on the experience from earlier Horizon 2020 projects in the area of responsible sourcing of raw materials in global value chains. The proposal should cover CRMs in at least five complex supply chains, including a batteries value chain.

The action should also contribute to improving the awareness of relevant external stakeholders and the general public across the EU about the importance of raw materials for society and of the challenges related to their sustainable supply.

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

HORIZON-CL4-2022-RESILIENCE-01-06: Sustainable and innovative mine of the future (IA)

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>	Innovation Actions
<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>In order to achieve the expected outcomes, and safeguard the Union’s strategic assets, interests, autonomy, or security, namely to increase EU resilience in raw materials supply chains for EU industrial value chains and strategic sectors to enable their green and digital transition and to reduce current EU over-dependence on a few third countries for critical raw materials by increasing sustainable and responsible sourcing of primary and secondary raw materials and by using sustainable, smart, efficient and environmentally friendly technologies, participation to the topic is limited to legal entities established in Member States, associated</p>

	<p>countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community.</p> <p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p> <p>Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.</p>
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.

Expected Outcome: Projects’ outcomes will enable achieving the expected impacts of the destination by increasing access to primary raw materials, in particular critical raw materials for EU industrial value chains and strategic sectors.

Projects are expected to contribute to the following outcomes:

- Develop sustainable and smart mining technologies for exploitation of EU mineral resources;
- Contribute to a more safe and environmentally friendly, resource- and production efficient sustainable mining;
- Develop methods, technologies and processes aiming for digitisation and automation of raw materials production;
- Contribute to the implementation of the following actions of the EU Action Plan on Critical Raw Materials: Action 8: Develop Horizon Europe R&I projects on processes for exploitation and processing of critical raw materials to reduce environmental impacts starting in 2021 and Action 3: Launch critical raw materials R&I in 2021 on waste processing, advanced materials and substitution.¹³

Scope: Actions should contribute to applying, adapting and eventually developing big data technologies and Artificial Intelligence methodologies addressing mining industry requirements to deliver on the climate ambition of the European Green Deal. The challenge is to accelerate the innovation in the mining sector necessary for the digital transformation. Actions should aim to develop new, enabling, operational solutions to improve capabilities and performance of the raw materials value chain: from in situ mineral exploration and permitting procedures, to mineral extraction and processing including recycling, as well as closure and post closure activities.

¹³ COM (2020) 474

Actions should push the EU to the forefront of a safer, more sustainable and intelligent extraction of mineral resources through the deployment of technologies such as electrification of ground and underground mobility, remote controlling, automation or autonomous processes with a particular focus on historic mine sites and deep deposits. Actions should develop sustainable solutions through industrial and user-driven multidisciplinary consortia covering the relevant mining and processing value chains and technologies.

Proposals should target minerals and metals and can address individual elements of the raw materials value chain or the value chain as a whole, and should provide quantitative measures of the progress beyond the state of the art. Proposals are also required to seek end user involvement to drive the research with their requirements and test the developed solutions, with a clear path to the exploitation of the results.

Actions should facilitate the market uptake of solutions developed through industrially- and user-driven multidisciplinary consortia covering the relevant value chain and should consider standardisation aspects when relevant.

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the introduction to this Destination. For TRLs 6-7, a credible strategy to achieve future full-scale manufacturing in the EU is expected, indicating the commitments of the industrial partners after the end of the project.

Actions should justify the relevance of selected pilot demonstrations in different locations within the EU (and also outside if there is a clear added value for the EU economy, industry and society).

The action should also contribute to improving the awareness of relevant external stakeholders and the general public across the EU about the importance of raw materials for society, the challenges related to their supply within the EU and about proposed solutions which could help to improve society's acceptance of and trust in sustainable raw materials production in the EU.

Actions should envisage clustering activities with other relevant selected projects for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end proposals should foresee a dedicated work package and/or task, and earmark the appropriate resources accordingly.

Proposals should take into account issues of accessibility and inclusivity, such as age, gender, disability, and socio-economic background.

HORIZON-CL4-2022-RESILIENCE-01-07: Innovative solutions for efficient use and enhanced recovery of mineral and metal by-products from processing of raw materials (IA)

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>	Innovation Actions
<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>In order to achieve the expected outcomes, and safeguard the Union’s strategic assets, interests, autonomy, or security, namely to increase EU resilience in raw materials supply chains for EU industrial value chains and strategic sectors to enable their green and digital transition and to reduce current EU over-dependence on a few third countries for critical raw materials by increasing access to primary and secondary raw materials by using innovative solutions for higher recovery rates and minimal environmental impact, participation to the topic is limited to legal entities established in Member States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community.</p> <p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p> <p>Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.</p>
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 6-7 by the end of the project – see General Annex B.

Expected Outcome: Projects outcomes will enable achieving the expected impacts of the destination by increasing access to primary raw materials and secondary raw materials, in particular critical raw materials for EU industrial value chains and strategic sectors.

Projects are expected to contribute to the following outcomes:

- Increase process selectivity, broader range and higher recovery rates of valuable raw materials, particularly critical raw materials;
- Unlocking substantial reserves of new or currently unexploited/underexploited resources within the EU;

- Significantly increase economic performance in terms of higher material-, water-, energy- and cost-efficiency and flexibility in minerals processing, metallurgical or recycling processes;
- Significantly improve the health, safety and environmental performance of the operations throughout the whole life cycle which is considered, including a reduction in waste, wastewater and emissions generation and a better recovery of resources from generated waste;
- Contribute to the implementation of the following actions of the EU Action Plan on Critical Raw Materials: Action 8: Develop Horizon Europe R&I projects on processes for exploitation and processing of critical raw materials to reduce environmental impacts starting in 2021 and Action 3: Launch critical raw materials R&I in 2021 on waste processing, advanced materials and substitution.¹⁴

Scope: Actions should develop sustainable systemic solutions through industrially- and user driven multidisciplinary consortia covering the relevant value chain of non-fuel, non-food raw materials.

Actions should develop energy-, material- and cost-efficient new sustainable mineral processing and/or metallurgical technologies and processes to increase the selectivity and the recovery rates of valuable by-products¹⁵, particularly critical raw materials¹⁶. The importance of the targeted raw material by-products for the EU economy should be duly demonstrated in the proposal. Recycling of end-of-life products is excluded from this topic.

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the introduction to this Destination. For TRLs 6-7, a credible strategy to achieve future full-scale manufacturing in the EU is expected, indicating the commitments of the industrial partners after the end of the project.

Actions should facilitate the market uptake of solutions developed through industrially- and user-driven multidisciplinary consortia covering the relevant value chain and should consider standardisation aspects when relevant.

Actions should justify the relevance of selected pilot demonstrations in different locations within the EU (and also outside if there is a clear added value for the EU economy, industry and society).

Actions should also contribute to improving the awareness of relevant external stakeholders and the general public across the EU about the importance of raw materials for society, the challenges related to their supply within the EU and about proposed solutions which could help to improve society's acceptance of and trust in sustainable raw materials production in the EU.

¹⁴ COM (2020) 474

¹⁵ The term "by-products" should be interpreted here as the constituents usually accompanying the major component(s) of a raw material at low concentrations.

¹⁶ EU list of critical raw materials 2020 – add link when published

Actions should envisage clustering activities with other relevant selected projects for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end proposals should foresee a dedicated work package and/or task, and earmark the appropriate resources accordingly.

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

HORIZON-CL4-2022-RESILIENCE-01-08: Earth observation technologies for the mining life cycle in support of EU autonomy and transition to a climate-neutral economy (RIA)

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 4.50 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 13.50 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>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).</p> <p>In order to achieve the expected outcomes, and safeguard the Union’s strategic assets, interests, autonomy, or security, namely to increase EU resilience in raw materials supply chains for EU industrial value chains and strategic sectors to enable their green and digital transition and to reduce current EU over-dependence on a few third countries for critical raw materials by increasing sustainable sourcing of primary raw materials by using Earth Observation technologies for environmental monitoring, participation to the topic is limited to legal entities established in Member States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community.</p> <p>The above exception is aligned with the Communication (2020) 474 on Critical Raw Materials Resilience, on the need to develop strategic international partnerships on raw materials.</p>

	Proposals including entities established in countries outside the scope specified in the topic/call/action will be ineligible.
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 3-5 by the end of the project – see General Annex B.

Expected Outcome: Projects outcomes will enable achieving the expected impacts of the destination by increasing access to primary raw materials, in particular critical raw materials for EU industrial value chains and strategic sectors.

Projects are expected to contribute to the following outcomes:

- Unlock the potential of Earth Observation technologies, including Copernicus, through the development of downstream products and services for the whole mining life cycle,
- Strengthen EU autonomy in the area of raw materials, while enabling a successful transition to a climate-neutral, circular and digital EU economy;
- Contribute to the implementation of the following actions of the EU Action Plan on Critical Raw Materials: Action 7 - Deploy Earth-observation programmes and remote sensing for resource exploration, operations and post-closure environmental management.¹⁷

Scope: Actions should develop and innovate new methods to analyse Earth Observation data, enabling systematic mineral exploration and continuous monitoring of extraction, closure and post closure activities.

These developments and innovations should be built upon Copernicus satellite constellations, and/or European national and commercial satellite missions, including, e.g. COSMO-SkyMed, EnMAP, PRISMA, TerraSAR-X, airborne and low-altitude platforms, ground based remote sensing, also including conventional in situ techniques, methods and field work measurements.

Actions targeting mineral exploration should develop EO methods that exploit multispectral, hyperspectral, SAR and in situ data permitting to systematically revise and update pre-existing maps and datasets identifying new mineral deposits at various scales, from mining regions to specific mining projects.

Actions targeting monitoring of extraction, closure and post closure activities should develop EO methods that exploit radar, optical and in situ data to innovate products and services: a) early warning systems and platforms that reduce operation risks; b) multi-sensor and multi-platform environmental monitoring systems that reduce the impacts on human health and preserve ecosystems.

¹⁷ COM (2020) 474

Foreseen outputs of this action could be, but not limited to, new methods to exploit EO data permitting to generate the following results at various scales, from mining regions to specific mining projects.

For mineral exploration and mining monitoring:

- improved maps and techniques to map potential target areas of critical raw materials
- improved maps of mining waste deposits
- improved seabed mineral mapping by exploring the connection between sea shore and coastal areas
- Ground instability maps
- improved maps of mining waste deposits
- Mineral stockpile volume estimation
- Acid mine drainage maps

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

HORIZON-CL4-2022-SPACE-02-56: Designing space-based downstream applications with international partners

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 1.00 and 1.50 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 8.00 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: Due to the scope of this topic, legal entities established in countries that have signed an administrative cooperation arrangements on Copernicus data access and Earth observation data exchange are exceptionally eligible for Union funding. Currently, these countries are: the United States, Australia, Ukraine, Chile, Colombia, Serbia, African Union, India and Brazil. Discussions towards similar cooperation have been started

	with other countries and regions (including United Nations Agencies and Asia-Pacific countries).
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL3-4 by the end of the project – see General Annex B.

Expected Outcome: Projects with international cooperation partner countries are expected to contribute to the three following high-level outcomes:

1. The use of EGNSS and sharing of expertise with public and/or private entities to introduce EU-space based applications/solutions leveraging their innovative, unique features, in particular Galileo differentiators (authentication, high accuracy) and EU know-how.
2. The use of Copernicus data, to develop jointly algorithms, services and/or products, which serve local user needs and/or enhance the Copernicus global product quality.
3. The combined use of EGNSS and Copernicus to develop innovative downstream applications combining positioning navigation and timing with Earth observation services.

Projects will also contribute to the following objectives:

- Lead to new or improved products, processes or services – using EU space technologies (Copernicus, EGNSS as enabler - that are capable of generating a marketable solution for the local market.
- Maximise and spread the benefits of space-based applications and solutions enabled by EGNSS and/or by Copernicus, to leverage downstream space excellence in particular of SMEs and universities, to facilitate investments and to foster market uptake.
- Create partnerships with non-EU entities towards commercialization, to trigger public and/or private investment from Europe and beyond to take advantage of market opportunities in Europe or local markets.
- Build capacity and awareness raising, around EGNSS and Copernicus based applications and solutions, particularly in the regulated domains.

Scope: Proposals can target one or more of the three expected outcomes. Proposal can also include the use of other space based or non-spaced based assets and services, with a preference given to those based in the EU and in the international cooperation partners countries applying to these topics.

The actions should focus on technical developments of EU-space based applications/solutions, dissemination, awareness-raising, as well as provide opportunities for the creation of business-oriented partnerships of European industry with international partners. By doing so the action should be achieving a critical mass of space based-application success stories, demonstrating the advantages and differentiators of EU space based solutions and services and making it an

attractive option for public authorities, private industries and private investors in Europe and elsewhere.

Cooperation with international partners, either public or private, is key to:

- promoting the uptake of satellite navigation , position and timing, to enable non EU countries to benefit from the advanced and unique features offered by EGNOS and Galileo, particularly in transport and regulated domains.
- promoting the uptake of Copernicus globally, exploiting possibilities for integrating in-situ, space data and information technologies. Building the Copernicus full, free and open data policy, the Commission seeks to facilitate access to Copernicus data and information for interested international partners. Administrative cooperation arrangements on Copernicus data access and Earth observation data exchange have already been signed with several countries; the United States, Australia, Ukraine, Chile, Colombia, Serbia, African Union, India and Brazil. Discussions towards similar cooperation have been started with other countries and regions (including United Nations Agencies and Asia-Pacific countries).

Tasks may include joint calibration and validation activities or integration of local in-situ systems to enhance the quality of data and service products. It is important to exploit the value-added of integration of EO observation technologies (both satellite, airborne and ground based) with positioning ones, and ICT (e.g. cloud computing) from international partner countries through the development of applications, and encourage their insertion into the market.

Technology promotion activities can include incentive schemes in the form of financial support to third parties, that will promote the uptake of space downstream applications across Europe and globally.

For proposals under this topic:

- Proposals dealing with EGNSS are encouraged to involve the relevant players on the European side whenever relevant (e.g. European Union Aviation Safety Agency (EASA), European Satellite Service Providers (ESSP) or Member States' Air Navigation Service Providers for EGNOS Safety of Life service to aviation, European Maritime Safety Agency (EMSA), ERA for other transports). Participation of industry, in particular SMEs, is encouraged;
- When dealing with Copernicus based applications, participation of at least one partner from a country that has signed a Copernicus Cooperation Arrangement is required; Proposals are encouraged to use the Copernicus Data and Information Access Services (DIAS), or other existing data access solutions instead of setting up their own download and processing infrastructure. They are also encouraged to integrate third-party data (including in-situ data) and envisage data assimilation into models and products made available on the Copernicus platform of the Copernicus services. Participation of partners

involved in international GEO initiatives is encouraged. Participation of industry, in particular SMEs, is encouraged;

- Involvement of public authorities is encouraged, whenever relevant;
- Involvement of post-graduate scientists, engineers and researchers is encouraged, if relevant for the project.

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL5-2022-D1-02-02
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	12 October 2021
Deadline date	10 February 2022 17:00:00 Brussels time

HORIZON-CL5-2022-D1-02-02: Development of high-resolution Earth system models for global and regional climate change projections

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 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 20.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Admissibility conditions</i>	The conditions are described in General Annex A. The following exceptions apply: The page limit of the application is 60 pages.
<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). Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.
<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: <ul style="list-style-type: none"> • Open access to any new modules, models or tools, which are developed from scratch or substantially improved with the use

	of EU funding under the action must be ensured through documentation, availability of model code and input data developed under the action.
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Expected Outcome: Proposals should improve European high-resolution, fully coupled atmosphere-ocean-land Earth System Models, able to robustly simulate key climate processes, their variability and future trends for this and well into the next century in order to enhance the quality, robustness and versatility of climate projections on a range of temporal and spatial scales (global and regional) to (1) support policies implementing the goals of the Paris Agreement and (2) address the societal need to assess and respond to the adverse impacts of climate change.

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

- Improved climate projections with sound uncertainty estimates under different scenarios on different temporal and spatial scales.
- Improved understanding and modelling of tipping points in the climatic systems, such as the ice shields at both poles and ocean circulation.
- Advances in attribution of climate change and its phenomena to anthropogenic forcings.
- Support to the evaluation of mitigation, adaptation and disaster risk reduction policies through improved linkages with Integrated Assessment Models.
- Pave the way for the next cycle of the IPCC Assessment reports by a leading role in the WCRP Coupled Model Intercomparison Programme (CMIP).
- Sustain and enhance European cooperation and leadership in climate sciences.

Scope: Projects should foster a fully coupled atmosphere-ocean-land-ice Earth-system model approach that contributes to a better understanding and representation of the processes, including for that drive and influence climate change on global and regional scale. Arctic and Antarctic regions should be considered as key elements in global climate changes.

Projects should make efficient use of available and high quality observational data (e.g. space-based and not space based, including in-situ and paleoclimatic data) for the development of robust model validation, verification, and improve uncertainty estimation methodologies.

Where relevant, high-resolution model development and evaluation should be properly connected with major programmes in the domain of Earth Observation such as the Copernicus Programme, the ESA science satellite missions in Europe, as well as the Group on Earth Observations (GEO) and the Global Earth Observation System of Systems (GEOSS) at global level.

They should also strive to reduce uncertainty of key parameters of climate and hydrological systems. Projects should advance methods for assessing and attributing model outputs and

climate change impact on regional scales with the support of advanced digital technologies, such as artificial intelligence methodologies.

The advanced climate modelling activities should support the attribution of observed and projected climatic hazards to climate change or climate variability.

The activities should build on the experiences from and results of other European projects contributing to the development of a new generation of climate models¹⁸.

Beneficiaries are encouraged to take advantage of the emerging ICT infrastructures (e.g. EuroHPC and other high performance computing, cloud-based facilities) that will be made available through the Destination Earth initiative under the Digital Europe Programme¹⁹.

If adding value to the project outcomes, coordination with the Destination Earth initiative can be proposed to ensure the timely development of “climate replicas” building on the new state-of-the-art IT infrastructure, including access to European high performance computing resources and an operational platform to upload and integrate the models and data developed in the course of the projects. Connection to the European Open Science Cloud (EOSC) should be considered where relevant.

When dealing with models, actions should promote the highest standards of transparency and openness, as much as possible going well beyond documentation and extending to aspects such as assumptions, code and data that is managed in compliance with the FAIR principles²⁰. In particular, beneficiaries are strongly encouraged to publish results data in open access databases and/or as annexes to publications. In addition, full openness of any new modules, models or tools developed from scratch or substantially improved with the use of EU funding is expected.

International cooperation is encouraged.

Projects are expected to co-operate with other projects funded under this call, as well as other relevant projects under Destination 1 and Cluster 6, Destination 5.

¹⁸ E.g., H2020 CRESCENDO (Coordinated Research in Earth Systems and Climate: Experiments, kNoledge, Dissemination and Outreach) <https://cordis.europa.eu/project/id/641816> , H2020 PRIMAVERA (PRocess-based climate sIMulation: AdVances in high resolution modelling and European climate Risk Assessment) <https://cordis.europa.eu/project/id/641727>, or projects funded from the call topic H2020-LC-CLA-18-2020.

¹⁹ <https://ec.europa.eu/digital-single-market/en/europe-investing-digital-digital-europe-programme>

²⁰ FAIR (Findable, Accessible, Interoperable, Reusable). Further information: <https://www.go-fair.org/fair-principles/>; and Final Report and Action Plan from the European Commission Expert Group on FAIR Data, “TURNING FAIR INTO REALITY” (https://ec.europa.eu/info/sites/info/files/turning_fair_into_reality_0.pdf)

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL5-2021-D6-01-11
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	24 June 2021
Deadline date	19 October 2021 17:00:00 Brussels time

HORIZON-CL5-2021-D6-01-11: Radical improvement of road safety in low- and medium-income countries in Africa

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 8.00 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: Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 5-6 by the end of the project – see General Annex B.

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

- Contribute to the global target of 50% fewer road fatalities and serious injuries by 2030 in low to medium income countries in Africa.
- Contribute to implementing the recommendations of the Road Safety Cluster of the African-EU Transport Task Force adopted in 2020.
- More effective design of road safety practices, measures and policies in the targeted countries; establishment of the safe system approach in national road safety strategies.
- In line with the Sustainable Development Goals and with the principles of the Joint EU-Africa Strategy (JAES), the activities to be implemented should contribute to the

improvement of road safety and traffic fluidity conditions in Africa, ultimately saving thousands of lives and lessening the human, social and economic burden of road accidents.

- The reinforcement of endogenous African capabilities with a view to long term sustainable progress in the fight against road casualties and for a more efficient and sustainable transport system.
- The dissemination of European know-how and the deployment of sound technical and governance solutions. In particular, the outcomes of the SaferAfrica action should be included (in particular the African Road Safety Observatory).

Scope: Over 650 road deaths per day occur on African roads and unless measures are taken, road crashes in Africa are projected to increase by 68% over the next decade. African road traffic death rates are the highest globally and more than four times higher than the European average.

Building upon the work and activities already undertaken at EU level in this area, including the Safer Africa project and in line with the recommendations of the Road Safety Cluster of the African-EU Transport Task Force adopted in 2020, R&I is needed to create a strong analytical base and to develop and assess, with local partners, the implementation of small scale system pilots and its various components, at city, regional, national and continent level. Actions should contain the sharing of knowledge and best practice, data analysis, infrastructure for effectively reducing road deaths in Africa.

To address this challenge, proposals should address all of the following:

- In-depth road accident investigations should be carried out at least in selected areas/countries to be able to find evidence of the underlying contributing factors behind accidents, whether related to the road user, vehicle, traffic environment or the traffic system.
- develop an innovative approach to promote the Safe System approach in selected African countries, enabling the exchange of data, methodologies, training, knowledge and best practice with particular focus on leading road safety agencies, traffic system “owners” such as road authorities, the police, regulating and certifying agencies to support the preparation of their road safety strategies and targets.
- Analyse the most appropriate road safety assessment methodologies and traffic management systems, as well as protection principles for the vulnerable road users and vehicle occupants, and define criteria for measuring future progress. Moreover, identify requirements for skills development and training of staff, and research and innovation needs, with a view to quick deployment of suitable solutions.
- design, develop and implement a series of small scale pilot demonstration projects to test the implementation of a safe system approach at different levels (national, regional, city), involving different local stakeholders (e.g. civil society organisations such as citizens’

associations, and non-governmental organisations), local government bodies and institutions as well as private companies.

- carry out an evaluation and assessment of the pilot demonstration projects that includes feedback from local actors, national and international stakeholders gathered through specific participatory workshops.
- Define guidelines detailing requirements and propose recommendations from the small scale pilot demonstrations useful for the implementation of a safe system approach to be up-scaled for the African continent (capacity building).

A balanced participation of European and African partners in these activities is expected, also with the aim of reinforcing endogenous African capabilities, and will be taken into account in the evaluation of proposals. Multinational international cooperation with relevant third countries is encouraged in order to leverage resources and impact.

Typically, projects should have a duration of 36 to 48 months. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts or durations.

Social innovation is recommended when the solution is at the socio-technical interface and requires social change, new social practices, social ownership or market uptake.

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL5-2021-D3-02-01
Types of action	HORIZON Innovation Actions
Deadline model	single-stage
Opening date	24 June 2021
Deadline date	05 January 2022 17:00:00 Brussels time
HORIZON-CL5-2022-D3-02-02: AU-EU Energy System Modelling	

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 2.50 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 5.00 million.
<i>Type of Action</i>	Research and Innovation Actions

<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.</p> <p>In addition to the conditions described in General Annex B, the consortium must include at least three legal entities from three different African countries.</p>
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Expected Outcome: Project results are expected to contribute to all of the following expected outcomes:

- Reinforce the activities in the long term the AU-EU HLPD CCSE Partnership.
- Provide knowledge and scientific energy system modelling as evidence base including the environmental, social and economic trade-offs to contribute to R&I strategy and policy making.
- Increase clean energy generation in the African energy systems.
- A permanent network of African experts and expertise in this area.

Scope: The topic is contributing to the activities of the AU-EU High Level Policy Dialog (HLPD) Climate Change and Sustainable Energy (CCSE) partnership. Current models are based on developed country standard and usage. The development of energy system models tailored to the specific African social, economic and regulatory environment is crucial for energy generation system planning and for energy policy development. Today African countries are relying heavily on developed country models and expertise.

Therefore, the proposal should develop and test models for decision makers and planners to design and evaluate energy system(s) with a high penetration of renewable energy generation in African countries through a regional approach. Considerations are to be given to climate neutrality of cities and industries, using no fossil fuels. A focus should be made on the introduction of clean energy technologies. The tests should be done for at least two base cases.

Proposals should include activities to coordinate with the project(s) to be selected under the topic HORIZON-CL5-2021-D2-02-01.

Actions should promote the highest standards of transparency in model adoption, including assumptions, architecture, code and data. The outcome of the project should be widely disseminated and all the source codes of the whole model to be open source and open access to stimulate future development. To ensure future uses, African experts in energy and in models development should be full partners in the project. The project should identify further local training needs.

The project should make use of existing European activities to create synergies and cross-fertilisation.

The project will contribute to the work of the AU-EU HLPD CCSE partnership through networking activities with existing projects.

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL6-2022-BIODIV-01-08
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	28 October 2021
Deadline date	15 February 2022 17:00:00 Brussels time

HORIZON-CL6-2022-BIODIV-01-08: Assessing the nexus of extraction, production, consumption, trade and behaviour patterns and of climate change action on biodiversity in the context of transformative change

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 3.00 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: Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.

Expected Outcome: In line with the EU biodiversity strategy, a successful proposal must develop knowledge and tools to understand the role of transformative change for biodiversity policy making, address the indirect drivers of biodiversity loss, and initiate, accelerate and upscale biodiversity-relevant transformative changes in our society.

Projects must address all of the following outcomes:

- Economically, socially, ethically and institutionally viable and sustainable pathways are designed to minimise biodiversity loss or to enhance biodiversity. These pathways should consider mutually influencing extraction, production, consumption, trade patterns in the medium- and long-term (beyond 2030).
- Improve understanding of the human dimensions impacting biodiversity i.e. ethics, social context, institutions, organisation, behaviour will provide policy makers, industrial stakeholders and civil society the tools needed to reframe their actions, by highlighting the synergies of mainstreaming biodiversity with climate transitions, including on how to avoid or minimise trade-offs.

- Better understand social norms and behaviours, linked to socio-economic values (e.g. ethics, social context of individuals, consumers, institutions, organisations, industry) affecting biodiversity.
- Inform and motivate transformational change through learning, co-creation and dialogue based on case studies. The understanding of the biodiversity inter-dependencies of the SDGs has improved; IPBES and IPCC are strengthened through European research and innovation. Provide a set of approaches, tools and knowledge influence policies at the appropriate level on transformative change for biodiversity – the key elements for this change are delivered by the portfolio of cooperating projects (of which these projects form part).

With focus on assessing the nexus of extraction, production (including processing), consumption, trade and behaviour patterns, including transformative changes for climate change on biodiversity for the EU and Associated Countries, international cooperation in particular with African countries, Brazil, Latin American and Caribbean countries or the Mediterranean region is strongly encouraged.

Scope: Proposals should address all the following points:

- Assess how extraction, production, processing, consumption, trade, behaviour patterns, especially linked to primary production (e.g. livestock with/or energy crops, etc. including through tele-coupling from consumption and all along supply chains), integrated food systems, and transformative changes towards climate neutrality, affect biodiversity and ecosystem services.
- Develop pathways together with key industries and key stakeholders to minimise loss of, and enhance biodiversity, whilst increasing the delivery of a wide range of ecosystem services. These industries cover food, feed, fibre, energy production and the wider food chain (related to bio-economy, renewable energies, infrastructure, technologies)²¹, and the deployment of climate mitigation and adaptation measures potentially harmful for biodiversity (e.g. concrete walls in coastal areas, replacement of biodiversity rich ecosystems for energy crops, etc.).
- Identify and address leverage points for transformational change in trade, triggering changes in established and new production and consumption patterns for new business models.
- Highlight the potential of (1) public procurement for delivering biodiversity benefits and (2) nature-based solutions for enabling and accelerating the relevant aspects of transformative change.
- Quantify investments into infrastructure and labour that could be shifted from impacting biodiversity negatively towards benefits for biodiversity, including the anticipation,

²¹ Based on the development of sustainable pathways as issued by projects such as CD-LINKS and EUCalc.

mitigation and management of social, institutional and economic conflicts this may trigger (or decrease), to achieve a just transition process.

- Understand and engage communities and other social actors, including through citizens science, and initiate behavioural changes leading to production and consumption patterns preventing further biodiversity loss.
- Cooperate with ongoing activities to include biodiversity into integrated assessment models²² and analyse the usability of existing and emerging concepts such as ‘Planetary Boundaries’, ‘Doughnut Economy’, ‘Environmental Footprints’.
- Explain the relevance of transition pathways for biodiversity for competitive sustainability, towards a just transition in the full range of SDGs and climate neutrality.

Unsustainable production and consumption, including the role of trade for linking both, are pushing many of the direct drivers of biodiversity loss: land use change, overexploitation, climate change and pollution. Proposals should, based on a clear understanding of these relationships²³ address how leverage points and levers can be identified and used for generating benefits for biodiversity, e.g. through revision of regulation, standards, funding practices or governance processes.

They should highlight how the primary production sectors (in particular in agriculture, forestry, fisheries, raw material extraction, and also the construction sector) and the related infrastructure and energy provision and use impacts biodiversity directly. They should show effects on the direction of economic development, which leads to lock-in effects, inequalities, lack of capacities of institutions at every level to shift towards sustainable use, the protection and restoration of biodiversity and ecosystem services. On patterns of consumption, proposals should show how their impacts such as uneven use and exploitation of resources, generation of waste and pollution, value setting, power setting in societies, institutions and financial streams could be addressed in business, institutional and consumer agendas to achieve positive outcomes for biodiversity.

Proposals should assess the cultural diversity that influences these compromises and people’s engagement, and lead the way to further mainstream biodiversity in socio-economic and environmental agendas, from the transformative aspect of changing extraction, production and processing, consumption, trade and behaviour patterns, including on actions for addressing climate change on biodiversity. They should also analyse and test the use of nature-based solutions as tool in this regard. Optimal and cost-effective use of behavioural games, networks of sensors, GIS-mapping, big data and observational programmes such as the European Earth observation programme Copernicus, through the Group on Earth Observations (GEO) and the

²² Such as activities stemming from CL5-D1-CSR-07-2021/2, CL5-D1-CSR-09-2021/2 and CL5-D1-CSR-15-2021/2

²³ As provided in IPBES (2018, 2019), IPCC (2019), EKLIPSE and EC (2020), GBO-5 (2020), FP7 and H2020 projects on climate and urban transitions. See also <http://www.biodiversitybarometer.org/>

Global Earth Observation System of Systems (GEOSS) as well as citizens' observatories, should be used as appropriate to enable the integration and visualisation of data.

Social innovation is recommended when the solution is at the socio-technical interface and requires social change, new social practices, social ownership or market uptake.

Proposals should build their analysis upon the links between multiple Sustainable Development Goals, to deliver direct and indirect biodiversity benefits, and of the role of biodiversity in reaching the set of Sustainable Development Goals, when related to extraction, production, consumption, trade and behaviour patterns.

Proposals should produce case studies and collect good and bad examples that could inform these transformations and inform and inspire transformative change through learning, co-creation and dialogue.

Proposals should include specific tasks and ensure sufficient resources to develop joint deliverables (e.g. activities, workshops, as well as joint communication and dissemination) with all projects on transformative change related to biodiversity. This concerns projects funded under this destination, or under calls included in Destination 'Fair, healthy and environmentally-friendly food systems from primary production to consumption' related to transformational change (Fair, healthy and environmentally-friendly food systems from primary production to consumption) that aim to deliver various co-benefits, including on the reduction of biodiversity loss. Projects should use existing platforms and information sharing mechanisms relevant for transformational change and on biodiversity knowledge²⁴. Cooperation and possibly synergies with relevant topics in Cluster 5 should be explored and established as relevant. Furthermore, cooperation is expected with the European partnership on biodiversity and with the Science Service.

Proposals should show how their results might provide timely information for major science-policy bodies such as the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Intergovernmental Panel on Climate Change (IPCC), as well as the Convention on Biological Diversity on project outcomes. Cooperation is requested with projects under 'HORIZON-CL6-2021-BIODIV-01-20: Support to processes triggered by IPBES and IPCC' and 'HORIZON-CL6-2022-BIODIV-01-10: Cooperation with the Convention on Biological Diversity'.

This topic should involve the effective contribution of social science and humanities disciplines.

²⁴ BISE, Knowledge Centre for Biodiversity, BiodivERsA, Oppla, NetworkNature and their joint work streams

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL6-2021-BIODIV-01-15
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	22 June 2021
Deadline date	06 October 2021 17:00:00 Brussels

HORIZON-CL6-2021-BIODIV-01-15: Quantify impacts of the trade in raw and processed biomass on ecosystems, for offering new leverage points for biodiversity conservation, along supply chains, to reduce leakage effects

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 2.00 and 3.00 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 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: Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.

Expected Outcome: In line with the EU biodiversity strategy, a successful proposal will develop knowledge and tools to understand the role of transformative change for biodiversity policy making, address the indirect drivers of biodiversity loss, and initiate, accelerate and upscale biodiversity-relevant transformative changes in our society.

Projects should address all following outcomes:

- understanding and quantifying the impacts of the trade in raw and processed non-food biomass²⁵ from land and sea on biodiversity and on the wide range of services that ecosystems can provide, including in relation to climate change mitigation and adaptation.

²⁵ See https://knowledge4policy.ec.europa.eu/bioeconomy/topic/biomass_en (for energy, feed, fibre, textile production or carbon storage)

- identifying new leverage points for biodiversity conservation²⁶, for example along supply chains, within and beyond the retailing sector, reducing leakage effects (including carbon leakage), and providing recommendations on how to address these leverage points at corporate and institutional level.
- making available and using (local) solutions for retailers and their leverage effects on (global aspects of) patterns of biomass production and consumption, rebuilding our economy in a biodiversity-friendly way within planetary boundaries, including through sustainable corporate governance.
- specifying the meaning of transformational change in practice, based on case studies.
- improving the understanding of the biodiversity inter-dependencies of the SDGs; strengthening IPBES and IPCC by the contribution of European research and innovation.
- providing approaches, tools and knowledge influence policies at the right level on transformative change for biodiversity – the key elements of this change by the portfolio of cooperating projects (of which these projects are part).

With the focus on quantifying impacts of trade of raw and processed biomass on ecosystems, projects are encouraged to engage in international cooperation (in particular with African countries, Brazil, Latin American and Caribbean countries or the Mediterranean region) to find new leverage points for biodiversity conservation along supply chains and to reduce leakage effects for the EU and associated countries²⁷.

Scope: In addition to focusing on limiting the impacts from biomass production and consumption on biodiversity, proposals should look at the whole trade-related value chain, at the scale needed to have a greater effect on protecting and restoring biodiversity. Proposals should analyse how the biomass sector could increase its positive impact on biodiversity. They should support biodiversity to deliver a wide range of ecosystem services, including on mitigating and adapting to climate change.

Proposals should increase the volume of evidence available by taking systematic approaches that take account of links between activities and leakage effects at different stages in the value chain or link production and consumption explicitly, including with institutions, businesses, retailers and investors, civil society, and should cover more than one product at a time.

The knowledge gained should help establish an ‘ecological footprint’ of biomass and the manufactured goods based on biomass, within planetary boundaries as stipulated in the EU bioeconomy strategy²⁸. The knowledge should be usable for science-industry cooperation on the bioeconomy²⁹, and should follow the pollution and climate neutrality targets and

²⁶ As referred to in the understanding of transformative change in IPBES and GBO-5, EEA

²⁷ Including telecoupling effects on and from Europe

²⁸ See https://ec.europa.eu/commission/news/new-bioeconomy-strategy-sustainable-europe-2018-oct-11-0_en and biomass assessment studies https://ec.europa.eu/knowledge4policy/projects-activities/jrc-biomass-study_en

²⁹ Such as the BBI Joint Undertaking and later the Circular bio-based Europe (CBE) Partnership

commitments, due diligence and human rights requirements, and the policy on just transition, for the service industry and the financial sector.

Proposals should take into account the role of governments as major consumers of goods and services (and the leverage in procurement processes), and of manufacturers and retailers as consumers of primary resources.

The outcomes of these projects should help integrate biodiversity values into the circular economy, for example by cutting waste from the biomass chain, reducing leakage effects, tele-coupling, using carbon and nitrogen footprints in production processes and minimising the use of plastic in the economy. The projects should give explicit values and accounting of these benefits for biodiversity.

Proposals should look at how to further mainstream biodiversity into socio-economic and environmental agendas, from the transformative aspect of minimising the impacts of trade in raw and processed biomass for protecting, sustainably managing and restoring biodiversity and the wide range of ecosystem services it can deliver, in order to nudge pathways towards fair and equitable development and just transitions (1) across the EU Member States and associated countries, and (2) globally.

Proposals should build their analysis on the synergies between multiple Sustainable Development Goals, to deliver directly and indirectly biodiversity benefits. They should highlight the role of biodiversity in attaining the set of Sustainable Development Goals relating to the trade in raw and processed biomass.

Proposals should provide case studies and collect good and failed examples that can serve as useful inputs to these transformations. They should inform and inspire transformative change through learning, co-creation and dialogue.

Proposals should include specific tasks and allocate sufficient resources for coordination measures, to develop joint deliverables (e.g. activities, workshops, joint communication and outreach measures) with all projects on transformative change related to biodiversity funded under this destination. This applies to projects funded under this destination that aim to deliver multiple co-benefits, including on the reduction of biodiversity loss³⁰. Proposals should use existing platforms and information sharing mechanisms relevant to promoting transformational change and sharing biodiversity knowledge³¹. Furthermore, projects are expected to cooperate with the European partnership on biodiversity³² (HORIZON-CL6-2021-BIODIV-02-01) and the Science Service (HORIZON-CL6-2021-BIODIV-01-19).

Proposals should show how their results can provide timely information for relevant IPBES and IPCC functions. They are expected to cooperate with the CBD, and with projects 'HORIZON-CL6-2021-BIODIV-01-20: Support to processes triggered by IPBES and IPCC',

³⁰ In addition, cooperation with projects run under the call Horizon 2020 LC-CLA-14-2020 'Understanding climate-water-energy-food nexus and streamlining water-related policies'

³¹ BISE, EC Knowledge Centre for Biodiversity, BiodivERsA, Oppla, NetworkNature and their joint work streams

³² <https://www.biodiversa.org/1759>

‘HORIZON-CL6-2022-BIODIV-01-10: Cooperation with the Convention on Biological Diversity’ and ‘HORIZON-CL6-2021-BIODIV-01-21: Impact and dependence of business on biodiversity’.

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL6-2021-BIODIV-01-18
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	22 June 2021
Deadline date	06 October 2021 17:00:00 Brussels time

HORIZON-CL6-2021-BIODIV-01-18: Understanding the impacts of and the opportunities offered by digital transformation, new emerging technologies and social innovation on biodiversity

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 2.00 and 3.00 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 5.00 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: Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.

Expected Outcome: In line with the EU biodiversity strategy, successful proposals will develop knowledge and tools to understand the role of transformative change for biodiversity, tackle indirect drivers of biodiversity loss, and initiate, accelerate and upscale biodiversity-relevant transformative change in our society.

Digital technologies are transforming all sectors of society, from food production to mobility, energy, climate mitigation and adaptation measures, construction, infrastructure, technology use, human behaviour and societal organisation, with different impacts on and perceptions of biodiversity, due to the speed, scale and level of connectivity of these transformations. Projects should help identify a safe operating space, in which digitalisation and new emerging technologies generate no unsustainable rebound effects, but instead can be a vehicle for

accelerating and amplifying the transition to a safe and just world for humankind whilst protecting, restoring and sustainably using biodiversity and ecosystem services.

Project should address all following outcomes:

- A better understanding, today and for the future, of the impacts on, risks and opportunities for biodiversity of digital transformation (for example smart technologies, artificial intelligence, automation, miniaturised sensors, citizen science applications, crowdsourcing), new materials (e.g. for biomimicry), and new and emerging technologies.
- Identification and an assessment of how system-level change affecting biodiversity through social innovation happens. This should cover bringing in new technologies, new production processes, consumer products, regulations, incentives, or participatory processes, and changes how socio-technical and socio-ecological systems operate.
- Making proposals for safeguards to build public understanding of the range of diverse values held by members of the public (i.e. indigenous communities, youth, women, vulnerable groups in society, socially or economically marginalised groups), to promote democracy and a socially just transition taking action on biodiversity. Proposals should promote incorporating these safeguards in transformative processes linked to the digital sector and technology, which can have positive or negative impacts on biodiversity and on the wide range of services ecosystems can provide.
- Demonstrating the potential of social innovation to tackle biodiversity loss, as well as using biodiversity and the ecosystem services it provides, with nature-based solutions as case studies. Demonstrating how nature-based solutions, enabled by social innovation, tackle poverty, low resilience and social inequality to achieve a just transition.
- Testing active intervention by R&I policy and sector policies (niche creation, reformulation of governance, ‘exnovation’), also by empowering and endowing communities.
- Approaches, tools and knowledge influence policies provided at the right level on transformative change for biodiversity. The key elements for this change are to be delivered by the portfolio of cooperating projects (of which these projects form part).

Outcomes should be formulated in such a way that enables their potential users (policy makers, institutions, businesses, engineers, civil society) to understand and concretely apply them, including for monitoring, accounting and reporting purposes. The outcomes should be translated into options to ratchet up the targets and enabling mechanisms of the EU biodiversity strategy for 2030, the global post-2020 biodiversity framework, and to feed input into the processes on the Paris Agreement, the Sustainable Development Goals and IPBES. With the focus on the impacts and opportunities of digital transformation, new emerging technologies and social innovation on biodiversity for the EU and associated countries, projects are strongly encouraged to engage in international cooperation, in particular with African countries, Brazil,

Latin American and Caribbean countries or the Mediterranean region, in order to understand differences between the EU/AC and other world regions.

Scope:

- Proposals should generate, collect and distribute knowledge on how to tackle the indirect drivers of biodiversity loss linked to technological and social innovation, which includes digitalisation. They should also assess the impacts on biodiversity of the digital divide between urban, peri-urban and rural areas. Proposals should explain how changes in our societies are fostered by technological and social innovation impacting biodiversity – for example by bringing in new and emerging technologies, new production processes, consumer products, regulations, incentives, or participatory processes, which change how socio-technical and socio-ecological systems operate.
- Proposals are expected to contribute to informing stakeholders and users on the social and technological impacts of new and emerging technologies that are not covered by existing procedures for biodiversity-related risk assessments³³. This includes the wider positive and negative impacts on societal values, behaviour, institutional, financial and business frameworks, which in turn are having an impact on biodiversity and the capacity of ecosystems to provide a wide range of services.
- Proposals should assess which tools further mainstream biodiversity into policy making, and governance (including financing, the promotion of innovation, and bringing in new and emerging technologies) to achieve transformative action that benefits biodiversity, to avoid, mitigate or manage conflicts linked to these transformational changes³⁴. In doing this, proposals should engage with civil society, policy makers, finance and business leaders, to create a toolbox for transformative change via action on biodiversity.
- Proposals should build their analysis on the synergies between multiple Sustainable Development Goals to deliver both direct and indirect biodiversity benefits, staying within planetary boundaries, and on the role of biodiversity in reaching the set of Sustainable Development Goals. Proposals should factor in impacts and opportunities of digital transformation, new emerging technologies and social innovation on biodiversity. This explicitly includes the interdependence of biodiversity loss and climate change, and the impacts on biodiversity of digital, technological or social approaches on action to mitigate and adapt to climate change – and vice versa.
- Proposals should develop pathways for digital developments to achieve a successful twin digital and biodiversity transition. They should develop methodologies to assess their impacts (including the impacts from energy/electricity infrastructure, or on democracy and on trust in science) on environmental, social and economic systems. Such assessments

³³ Such as in the frame of the Convention on Biological Diversity and the Cartagena Protocol

³⁴ Referring to, and critically assessing, the understanding of transformative change in IPBES and GBO-5, EEA

should focus on the direct and indirect effects of digital developments on biodiversity, intertwined with climate change and health.

- Proposals should provide case studies and a collection of good and failed examples, including current relevant business models, the role of citizen science, and scenarios that could provide useful impact to these transformations and inform and inspire transformative change through learning, co-creation and dialogue.
- Proposals should include specific tasks and allocate sufficient resources to develop joint deliverables (e.g. activities, workshops, and joint communication and dissemination) with all projects on transformative change related to biodiversity funded under this destination. They should use existing platforms and information sharing mechanisms relevant to transformational change and to biodiversity knowledge³⁵. Furthermore, projects are expected to cooperate with the Biodiversity Partnership and the Science Service. Proposals should show how their results and outcomes can provide timely information to major science-policy bodies such as the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Intergovernmental Panel on Climate Change (IPCC), and to the Convention on Biological Diversity. They are expected to cooperate with projects ‘HORIZON-CL6-2021-BIODIV-01-20: Support to processes triggered by IPBES and IPCC’ and ‘HORIZON-CL6-2021-BIODIV-2022-01-10: Cooperation with the Convention on Biological Diversity’.
- Where relevant, projects are expected to create links to and use information, data and impact-related knowledge from the European Earth observation programme Copernicus, the Group on Earth Observations (GEO) and the Global Earth Observation System of Systems (GEOSS).

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL6-2022-FARM2FORK-01-12
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	28 October 2021
Deadline date	15 February 2022 17:00:00 Brussels time

³⁵ BISE, Knowledge Centre for Biodiversity, BiodivERsA, Oppla, NetworkNature and their joint work streams

HORIZON-CL6-2022-FARM2FORK-01-12: Agro-ecological approaches in African agriculture systems

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 28.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.</p> <p>The following additional eligibility criteria apply:</p> <p>The proposals must use the multi-actor approach. See definition of the multi-actor approach in the introduction to this work programme part.</p> <p>The following additional eligibility criteria apply:</p> <p>Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, consortia must include at least eight independent legal entities established in Africa. The places of establishment of at least five of these legal entities must be in the same geographical region of Africa (as defined by the African Union: https://au.int/en/member_states/countryprofiles2)</p> <p>International organisations with headquarters in a Member State or associated country are exceptionally eligible for funding.</p>
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 5 by the end of the project – see General Annex B.
<i>Procedure</i>	<p>The procedure is described in General Annex F. The following exceptions apply:</p> <p>To ensure a balanced portfolio covering the agro-geographical regions of Africa, grants will be awarded to applications not only in order of ranking but at least also to one project per geographical region that is the highest ranked, provided that the applications attain all thresholds.</p>

Expected Outcome: In line with the farm to fork strategy, and its promotion of global transitions on sustainable food systems, successful proposals will provide a comprehensive and integrated

response to current and future challenges benefiting people, nature and economic growth in Europe and in Africa.

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

- EU – Africa jointly tackle climate change and environmental-related challenges (e.g., biodiversity loss, natural habitats alteration, landscape degradation) and meet the objectives of the Paris Agreement on climate change, and contribute to the Sustainable Development Goals, in particular ensuring food and nutrition security and decent livelihoods.
- Identification of optimal combinations of agro-ecological practices that increase the climate change mitigation and adaptation of different farming systems in different agro-ecological zones in Africa while ensuring the financial viability of businesses.
- Quantification and assessment of socio-economic and environmental performance of agro-ecological strategies contributing to sustainable agriculture practices, supporting small farmers and access to local and international markets.
- Increased end-user adoption and implementation of agro-ecological practices by farmers supporting rural communities, ensuring farm resilience and viability at individual and system levels.
- Strengthened transdisciplinary research and integrated scientific support for relevant EU policies and priorities (EU strategy for Africa, Green Deal objectives, etc.).

Scope: The EU's relationship with Africa is a key priority for the EU. The effects of the COVID-19 pandemic and the growing urgency of the climate crisis put pressure both on domestic/local food production and on ecosystems that generate higher health risks with the emergence of new pest and diseases for plants, animals and humans.

The implementation of agro-ecological approaches will alleviate the pressure that agri-food production places on natural ecosystems, contributing to resilience of agri-food systems and facilitating nature-based responses to current and future agri-food risks and threats. Agro-ecological transitions of food systems requires strong food governance with interventions at different level (local, territorial, and value chain) and coherent public policies.

Proposals should build on existing and develop new knowledge, data, models (including indicators) to:

- Identify and evaluate the most suitable agro-ecological strategies for various farming systems in different agro-ecological zones, in Africa.
- Deliver a method to identify the best combination of agro-ecological practices for different farming systems, identifying barriers to and drivers of (socioeconomic and ecological) its wide implementation and the conditions, means and tools to support agro-ecological

transitions at individual, territorial and systems levels, and including prospective related to access to local and international markets.

- Develop indicators to monitor and measure the qualitative and quantitative impacts of these strategies for different farming systems, the climate neutrality potential and trade-offs, nutrients flows, biodiversity and improvement of in farm socio-economic resilience.
- Support farmers, advisory services and actors in value chains in implementing agro-ecological practices by establishing communities to support capacity building, knowledge exchange, and share best practices across different human communities in relation to agro-ecological practices that contribute to mitigating climate change and other environmental impacts.
- Identify approaches and methods to enhance the demand for food products resulting from agro-ecological practices, from local, national, regional and international markets.

Proposals must implement the 'multi-actor approach' and ensure adequate involvement of the farming sector and, as relevant, bio-based industries active in rural areas.

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL6-2022-FARM2FORK-01-13
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	28 October 2021
Deadline date	15 February 2022 17:00:00 Brussels time

HORIZON-CL6-2022-FARM2FORK-01-13: AU-EU Combatting all forms of malnutrition

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 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 11.00 million.
<i>Type of Action</i>	Research and Innovation Actions

<p><i>Eligibility conditions</i></p>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>The following additional eligibility criteria apply: Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, consortia must include at least five independent legal entities established in Africa. The places of establishment of these legal entities must cover at least three different specific regions in Africa (as defined by the African Union: https://au.int/en/member_states/countryprofiles2).</p> <p>Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.</p> <p>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.</p>
<p><i>Legal and financial set-up of the Grant Agreements</i></p>	<p>The rules are described in General Annex G. The following exceptions apply:</p> <p>Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants.</p> <p>The maximum amount to be granted to each third party is EUR 60 000.</p>

Expected Outcome: In line with the European Green Deal priorities and the farm to fork strategy for a fair, healthy and environmentally friendly food system, as well as with the EU’s climate objectives for 2030 and 2050, the EU’s “Comprehensive Strategy with Africa” calls for the EU to “partner with Africa to maximise the benefits of the green transition and minimise threats to the environment”. It states that: “The EU and Africa must join efforts to reach the Sustainable Development Goal of zero hunger and address the challenges of nutrition and food security by boosting safe and sustainable agri-food systems.” In support of this strategy, the EU and the African Union are implementing a ten-year roadmap (2016-2026) on research and innovation in food and nutrition security and sustainable agriculture to which the successful proposal will contribute. This will help to transform food systems to deliver co-benefits for climate (mitigation and adaptation), environmental sustainability, biodiversity and circularity, dietary shift, sustainable healthy nutrition and safe food, food poverty reduction and empowerment of communities, and thriving businesses. An estimated 821 million people are currently undernourished, and 151 million children under five years of age are stunted. At the same time, the number of overweight and obese people is increasing rapidly in Europe and Africa, with no signs of slowing.

This research and innovation action (RIA) will build on the international dimension of the farm to fork strategy. It relates to evidence presented by the EAT Lancet report and the 2020 Global Nutrition Report. It contributes to the agenda and follow-up of the 2021 UN World Food Systems Summit.

A successful proposal will develop and test approaches to innovations that improve nutrition through a deeper understanding of the unmet nutritional needs, aspirations, behaviours and preferences of consumers who remain underserved by markets and face limited access to affordable nutritious foods.

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

- Better informed nutrition policies that can be scaled-up by initiatives such as SUN (scaling-up nutrition).
- Improved nutrition in African countries reducing all forms of malnutrition through safe, healthy and affordable diets, including dietary shifts, that reduce the pressure of food production on land and water use and reduces the climate footprint of downstream activities from farm to fork.

Scope: Proposals are expected to address the following:

- Mapping and monitoring of dietary patterns at national/regional/rural/urban levels relevant to different socio-economic and cultural groups, including low-income settings, the most vulnerable, rural food environments and for those in conflict or protracted-crisis situations to better understand what people are eating and how they make food choices.
- Contribute to standardised metrics and tools to measure the food environment. In many food systems the absence of formal channels to acquire food lead to a dynamic, self-sufficiency and unregulated retail food environment with a large proportion of informal food vendors. This results in enormous variety in metrics in terms of reference points (i.e. food accessibility), media coverage (i.e. food promotion) and level of implementation (i.e. policies).
- Improved knowledge and measurement of the factors influencing dietary behaviour in selected African countries, and development of effective means for each food system actor to share food knowledge and improve food behaviour.
- Assessment of the value of and potential for scaling-up of sustainable traditional food knowledge based on access to biodiverse agro-ecological situations.
- Assessment of innovations to improve nutrition, driven by a deep understanding of the unmet nutritional needs, aspirations, behaviours and preferences of consumers who remain underserved by markets and face limited access to affordable nutritious foods.
- Innovative and effective tools to improve education, communication, engagement and training on sustainable healthy nutrition and diets, and more generally on sustainable food systems adapted to different population groups in respect of their age, culture and needs and considering gender.

- Provision of a scientific basis for sharing food knowledge and developing dietary advice to support policy makers to empower individuals to adopt healthy and sustainable food behaviour, as a win-win for both their health and the environment.
- Supporting the development of new integrated policy-making and implementation efforts such as the scaling-up nutrition initiative within and across countries (at multiple levels). This will support healthier and sustainable dietary behaviours and lifestyles with the provision of innovative, efficient, effective, evidence-based and ready-to-use tools/strategies including cost-benefit assessment of the different options proposed.
- Contributing to the mapping and monitoring of mycotoxin effects in unsafe foods and diet-related non-communicable diseases (NCDs) to better understand the relationship between lifestyle (including mycotoxin levels, diets, nutrition and alcohol), gender, geographical, socioeconomic and environmental factors, biological parameters, and the risk of development of diet related NCDs.
- Development of innovative and effective policies/strategies/tools contributing to reduce dietary and health inequalities as precursors of NCDs, in particular in vulnerable population groups.
- A space for mentoring and acceleration of innovative business concepts, including social innovation and upscaling for promising approaches using cascading funding opportunities.
- When relevant, creating links to and using the information and data of the European Earth observation programme Copernicus, the Group on Earth Observations (GEO) and the global Earth observation system of systems (GEOSS).
- Include a clear plan on collaboration with other projects selected under this topic, other nutrition related EU projects and similar projects funded under the EU-AU HLPD-FNSSA priority from different funding sources including Horizon 2020 and Horizon Europe, ERA-Nets, African Union research grants, DeSIRA or PRIMA. They should contribute to the work of the FNSSA-working group (WG) by linking to the LEAP4FNSSA project supporting the FNSSA-WG secretariat. They should participate in joint activities, workshops, and communication and dissemination activities and show potential for upscaling. Applicants should plan the necessary funding to cover these activities.
- Social innovation is recommended when the solution is at the socio-technical interface and requires social change, new social practices, social ownership or market uptake. This topic should involve the effective contribution of SSH disciplines.

Programme	Horizon Europe (HORIZON)
ID	HORIZON-CL6-2022-FARM2FORK-01-14
Types of action	HORIZON Research and Innovation Actions
Deadline model	single-stage
Opening date	28 October 2021
Deadline date	15 February 2022 17:00:00 Brussels time
HORIZON-CL6-2022-FARM2FORK-01-14: African food cities	

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>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>The following additional eligibility criteria apply: Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, consortia must include at least five independent legal entities established in Africa. The places of establishment of these legal entities must cover at least three different specific regions in Africa (as defined by the African Union: https://au.int/en/member_states/countryprofiles2).</p> <p>Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.</p> <p>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.</p>
<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 60 000.
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Expected Outcome: In line with the European Green Deal priorities and the farm to fork strategy for a fair healthy and environmentally friendly food system, as well as with the EU's climate objectives for 2030 and 2050, the EU's "Comprehensive Strategy with Africa" calls on the EU to "partner with Africa to maximise the benefits of the green transition and minimise threats to the environment". In support of this strategy, the EU and the African Union are implementing a ten-year roadmap (2016-2026) on research and innovation in food and nutrition security and sustainable agriculture to which the successful proposal will contribute. It will also contribute to the transformation of food systems to deliver co-benefits for climate (mitigation and adaptation), environmental sustainability and circularity, dietary shift, sustainable healthy nutrition and safe food, food poverty reduction and empowerment of communities, and thriving businesses.

Urban areas contribute significantly to global food-system related emissions and food waste. Urban growth often happens at the expense of natural resources. Urban areas are increasingly affected by the double burden of malnutrition: high prevalence of undernourishment and undernutrition and increasing obesity and the spread of non communicable diseases.

A successful proposal will build on initiatives like the Milan Urban Food Policy Pact (MUFPP), on the FAO urban food agenda and upon the recommendations of the Task Force Rural Africa report. It will address big, intermediate and small cities and towns. It will address the fact that poorly planned urban food systems lack opportunities to link rural and urban food producers, markets and consumers, and limit the access of vulnerable groups to safe and healthy nutrition.

Projects results are expected to contribute to all or some of following expected outcomes:

- A shift to food security and improved nutrition in five African cities (could encompass rural urban centres and cities) through a shift to healthy and affordable diets that reduces the pressure of food production on land and water use and reduces the climate footprint of downstream activities from farm to fork.
- Reducing the food-system-related environmental footprint, improving circularity (e.g. food and packaging waste), and providing citizens with new, sustainable and healthy products.

Scope: Proposals are expected to address the following:

- Understanding: promoting multi-stakeholder collaborations in assessing data on food challenges (including harmful marketing and advertising and unequal access to healthy food for the urban poor), and identifying opportunities and indicators in developing urban food policies.

- **Engaging:** mobilising a wide diversity of food system actors (from farm to fork, the public and private sector, and society, organic and conventional); in particular higher education institutions and research centres to work with local actors in support of evidence-based food policy development and to help provide local solutions to integrated food system challenges.
- **Mutual learning:** reinforcing or creating new networks of African cities and towns to share good practices and learn from and support each other. This implies also involving cities (in Africa, Europe or elsewhere) with well-developed food policies to provide guidance and lessons learned, as well as new forms of collaboration/twinning.
- **Innovation:** proposals should envisage a space for mentoring and accelerating innovative business concepts, including social innovation and upscaling in view of African or European food business entrepreneurs with special consideration of women and the diaspora using cascading funding opportunities. Proposals may involve financial support to third parties e.g. to academic researchers, start-ups, SMEs and other multidisciplinary actors, to, for instance, develop, test or validate developed assessment approaches or collect or prepare data sets or provide other contributions to achieve the project objectives. A maximum of EUR 60 000 per third party may be granted. Conditions for third parties support are set out in Part B of the General Annexes. Consortia need to define the selection process of organisations, for which financial support will be granted. A maximum 20% of the EU funding can be allocated to this purpose. The financial support to third parties can only be provided in the form of grants.
- Where relevant, creating links to and using the information and data of the European Earth observation programme Copernicus, the Group on Earth Observations (GEO) and the global Earth observation system of systems (GEOSS).
- Exploring how the food environment can become crisis-proof (whether something can be learnt from or has changed with the COVID-19 crisis) and how to create resilient local, regional food systems with border regimes, which do not disrupt supply chains.
- **Governance:** developing and evaluating innovative multi-actor urban food systems governance processes and capacities for science-backed integrated policy making and implementation actions that deliver on the international collaboration dimension of the farm to fork strategy objectives and Food 2030 co-benefits for health, environment, climate, circularity and inclusion, while minimizing trade-offs.
- **EU-AU partnership:** proposals should have a clear plan on how they will collaborate with other projects selected under this topic and similar projects funded under the EU-AU HLPD-FNSSA priority from different funding sources including Horizon 2020 and Horizon Europe, ERA-Nets, African Union research grants, DeSIRA or PRIMA. They should contribute to the work of the FNSSA-working group (WG) by linking to the LEAP4FNSSA project supporting the FNSSA-WG secretariat. They should participate in joint activities, workshops and as common communication and dissemination activities

and show potential for upscaling. Applicants should plan the necessary funding to cover these activities.

- Social innovation is recommended when the solution is at the socio-technical interface and requires social change, new social practices, social ownership or market uptake. This topic should involve the effective contribution of SSH disciplines.

HORIZON-CL6-2021-FARM2FORK-01-18: One Health approach for Food Nutrition Security and Sustainable Agriculture (FNSSA)

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 18.00 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	<p>The conditions are described in General Annex B. The following exceptions apply:</p> <p>The following additional eligibility criteria apply:</p> <p>Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, consortia must include at least five independent legal entities established in Africa. The places of establishment of at least four of these legal entities must be in the same geographical region of Africa (as defined by the African Union: https://au.int/en/member_states/countryprofiles2)</p> <p>Due to the scope of this topic, legal entities established in all member states of the African Union are exceptionally eligible for Union funding.</p> <p>The following additional eligibility criteria apply:</p> <p>The proposals must use the multi-actor approach. See definition of the multi-actor approach in the introduction to this work programme part.</p> <p>International organisations with headquarters in a Member State or associated country are exceptionally eligible for funding.</p>
<i>Technology Readiness Level</i>	Activities are expected to achieve TRL 5 by the end of the project – see General Annex B.

Expected Outcome: The EU's relationship with Africa is a key priority for the EU. The effects of the COVID-19 pandemic and the growing urgency of the climate crisis put pressure on both domestic/local food production and on ecosystems that generate higher health risks for plants, animals and humans with the emergence of new pest and diseases.

In line with the farm to fork strategy, and the development of Green Alliances on sustainable food systems, successful proposals will provide a comprehensive and integrated response to current and future challenges benefiting people, nature and economic growth in Europe and in Africa.

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

- EU – Africa jointly tackle climate change and environment-related challenges and meet the objectives of the Paris Agreement on climate change, and contribute to the Sustainable Development Goals;
- develop nature-based solutions to plant nutrition, plant health and animal health addressing human health, with innovative methods and technologies that optimize, and limit when necessary, the use of external inputs and helps farmers in the implementation of regulated deficit strategies;
- strengthened transdisciplinary research and integrated scientific support for relevant EU policies and priorities (the EU strategy for Africa, European Green Deal objectives, etc.);
- In line with the EU priorities, proposals should take into consideration the objectives of the European One Health Plan against Antimicrobial Resistance (AMR) ³⁶that aim at making the EU a best practice region, boosting research, development and innovation and shaping the global agenda.

Scope: The “One Health” approach to plant and animal health is based on a systemic perspective linking the health of ecosystems, animals and humans. It requires interventions at different level (local, territorial, value chain) and coherent public policies. ‘One Health’ can be applied to establish a transformative approach to increasing sustainable practices in agriculture and improving the overall health and well-being of humans, animals, and natural ecosystems.

There is a need to fill knowledge gap regarding interactions with different components and especially between human and animal and plant health and strengthen monitoring and evaluation systems to prevent the emergence and spread of pest and diseases with nature-based solutions.

Proposals should build on existing and new knowledge, data, models (including in situ calibration measurement) and available tools to:

- identify local farm animals and crops in the different agro-ecological zones in Africa to maintain/increase productivity, resilience and nutritional quality taking into account the

³⁶ The European One Health Plan Against Antimicrobial Resistance (AMR) can be found at: https://ec.europa.eu/health/sites/health/files/antimicrobial_resistance/docs/amr_2017_action-plan.pdf

interactions between plants, animals, diseases, pests, zoonosis and ecosystems under conditions of limited external inputs and increased abiotic and biotic stresses;

- develop innovative means including innovative methodologies for risk assessments and practices to tackle current and emerging plant pests and diseases, pests and zoonosis (including transboundary infectious livestock diseases) taking into account the interactions between plants, livestock health and the natural ecosystems;
- develop sustainable and systemic integrated approaches to plant and animal health from farm to international scales in line with a greener agriculture by optimising resource efficiency, minimising production losses and avoiding geographical spread of diseases/pathogens (i.e. control of locusts or other migratory pests, development of vaccines) including animal breeding and being responsible/respectful of natural ecosystem integrity, goods and services;
- establish a multidisciplinary team that works together to achieve these outcomes and bring together experts from academic, government, public, and private institutions to achieve meaningful change in public awareness, policies, and practices that support implementation of sustainable agricultural practices.

Proposals must implement the 'multi-actor approach' and ensure adequate involvement of the farming sector and, as relevant, bio-based industry active in rural areas.

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