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Horizon Europe Work Programme 2021-2022

11. Widening participation and strengthening the European Research Area

INFORMATION

accompanying HORIZON-WIDERA-2021-ACCESS-05-01: *"Capacity building to strengthen networks of higher education institutions and cooperation with surrounding ecosystems"*

1. Introduction

This guidance document is published together with the Horizon Europe Work Programme 2021-2022 – part 11. Widening participation and strengthening the European Research Area[1] and accompanies its Destination 1 *'Improved access to excellence'*, more in particular the topic HORIZON-WIDERA-2021-ACCESS-05-01: *'Capacity building to strengthen networks of higher education institutions and cooperation with surrounding ecosystems'*.

This document provides more information on different areas for institutional transformation in research and innovation, lays out examples of potential activities within these areas, explains the expected impact, and provides practical information to the applicants. The document is meant as a source of inspiration for Higher Education Institutions (HEI) on the different aspects that could be considered for their research and innovation missions.

2. Rationale

Europe has a strong knowledge community composed of highly competitive, entrepreneurial higher education institutions, increasingly networked with businesses and society. Working together in a structured way, this community has the potential to further strengthen its contribution to society, operating around SDGs and Missions[2], across languages, borders, disciplines and sectors, pushing the barriers of fundamental research and applied science, mobilising innovation ecosystems, supporting the emergence of innovative initiatives and enterprises and empowering engaged and active citizens to transform the way we live and work.

To strengthen the public science system as a key synergy initiative between the European Education Area[3] and the new European Research Area[4], and thereby capitalise on the potential of higher education institutions, support will need to be given to the various institutional transformation efforts institutions are undertaking towards the future, including, for instance, mainstreaming of open science practices, reinforcing cooperation and co-creation with other sectors incl. academia-business cooperation, upskilling talent, digitisation, etc.

The purpose of the current Horizon Europe action is to support capacity building for networks of higher education institutions and their partners in the local ecosystem, with a view of preparing integrated cooperation between institutions. Higher education institutions may include any type of HEI, research organisations, academies of science, polytechnic HEIs, HEIs of applied science, and specialised public laboratories. Higher Education Institutions' partners in surrounding ecosystems,

[1] https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/wp-call/2021-2022/wp-horizontal-expenditure_horizon-euratom-2021-2022_en.pdf
[2] https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/mission-oriented-policy-horizon-europe/
[3] Achieving the European Education Area by 2025 – Commission Communication, COM(2020)625
[4] Commission Communication on A new ERA for Research and Innovation, COM(2020)628

such as businesses, societal actors or other non-academic entities are encouraged to be involved as partner organisations. The capacity building aims to significantly strengthen cooperation between at least two organisations from higher education sector in a Widening country (or different Widening countries), by linking it with at least two internationally-leading institutions from two different Member States or Associated Countries.

The action will not fund research and innovation activities; rather it is meant to support the development of joint strategies, and concrete action plans empowering the networks' research and innovation transformations, as well as the (initial) implementation of the respective action plans, where possible in connection with other relevant EU or national funding sources.

The support for the transformation will occur with respect for the autonomy and diversity of HEIs. The way forward within the different areas for transformation remains the choice of the HEI network. A joint long-term vision to drive systemic, structural and sustainable impact at all levels of the participating higher education institutions developed for the research and innovation dimension should, if and where needed, be elaborated for education.

3. Outline of institutional transformation areas in research and innovation

Proposals are expected to clearly outline the cooperation and strategy for stepping up and stimulating scientific excellence and innovation capacity in defined areas of research and innovation as well as the scientific quality of the partners involved in the exercise. This strategy should include arrangements for institutional transformation according to a shared agenda that could include the following areas for transformation:

a) developing shared research & innovation strategies and roadmaps to create directional and interdisciplinary critical mass, in order to more effectively create impact for society;
b) sharing capacity and resources, through collaborative settings preparing the network towards the establishment of a European HEIs alliance or similar long-term network,
c) strengthening attractiveness of researchers' careers, towards a pipeline of talents crucial for an effective European Research Area, including reform in career assessment; supporting institutional change through inclusive gender equality plans
d) co-operation with surrounding ecosystem actors for the transmission of knowledge and talents, e.g. through creation or reinforcing of technology transfer offices and cooperation platforms;
e) transition to knowledge- and digitally-driven HEIs, conducting Open Science;
f) creating proximity to and engaging citizens for solving societal challenges.

For all areas listed above, where appropriate, legal, regulatory, and financial barriers hampering cooperation among higher education institutions in research and innovation as well as recommendations on the way forward should be identified.

4. Examples of potential activities

The way forward with and within the different policy modules for transformation of HEIs remains the choice of the network of HEIs: which modules to work on, adding modules not present in the current list, defining the weight attached to each module, choosing the most appropriate deployment models, taking the necessary transformation actions. The activities chosen should result in initial tangible

progress of the individual HEIs, and the networks as a whole, towards integrated cooperation capacity.

a) **Developing shared research & innovation strategies and roadmaps**: Based on the joint long-term strategy and challenge-based approach as defined in the mission statement of the network of HEIs, identifying shared challenges linked to UN SDG's, Missions, the Green Deal, or other societal challenges, leading to individual or where relevant joint action plans to create EU-level critical mass; implementing the action plans and science agenda through additional activities.

   - *Identification of challenges and convergence*: long-term roadmap development towards individual and shared research & innovation challenges addressing key global challenges; strategies breaking down walls towards the integration of scientific fields and supporting interdisciplinarity, in order to accelerate research and generate breakthroughs that can benefit various fields; roadmaps could include strategies for strengthened international collaboration and 'internationalisation at home' (both within and beyond Europe);

   - *Preparation of action plans*: development and implementation of shared action plans (e.g. regarding the Green Deal, AI, pandemics) for joint or individual activities and international collaboration, such as platforms or capacity to facilitate interdisciplinary collaboration of researchers (incl. where relevant with socio-economic sciences and humanities), in synergy with the network's common education strategy and regional engagement; merging efforts in order to approach challenges in a more holistic way;

   - *Identification of resources*: identifying appropriate resources, infrastructures or partners to implement the science agenda;

   - *Scaling excellence*: the HEI network as a vehicle to scale scientific excellence by joining forces with other partners in the HEIs' surrounding ecosystem sharing similar priorities, building and sharing (interoperable) capacity; synergies through increased capacities to manage financial engineering and mobilising resources such as InvestEU.

b) **Sharing capacity, infrastructure and resources**: Developing a strategy towards sharing resources and infrastructures across the HEI network and involved research systems, incl. identification of legal and financial barriers and enablers to improve governance of scientific and innovation cooperation among research systems; deployment of the strategy, sharing capacity.

   - *Needs:* Identification of specific requirements for infrastructures and resources to be shared, including access to data and information, and the possibility to introduce adjustments and customise offer;

   - *Cooperation*: identification of legal and regulatory barriers and enablers to scientific and technological cooperation among HEIs, research organisations and operators of research and technology infrastructures, involving local, regional and national governments; implementation of joint structures for a common science agenda, pooling expertise, platforms, data and resources together; exploring and piloting incentives for cooperation;

   - *Infrastructures for Open Science*: development and implementation of strategies for synergies between current and future digital infrastructures underpinning Open Science (e.g. infrastructures that support access to, preservation, sharing and re-use of scientific information); promoting their federation within the European Open Science Cloud and with other European research data infrastructures.

c) **Strengthening attractiveness of researchers' careers, including through gender equality plans**: Deploying human resources strategies, enriching research and career evaluation systems that mainstream Open Science practices, foster diversity and inclusiveness, including gender

equality in research, as well as strategies for balanced circulation of knowledge and researchers, promoting intersectoral/interdisciplinary mobility of researchers.

- *Framework conditions*: implementing action plans, notably the Human Resources Strategy for Researchers (HRS4R); identification of further needs towards transformation with respect to current national regulations towards research careers, mobility, salaries, gender balance; identification of conditions and incentives for attractive career environments and facilitating circulation of students and staff;
- *New balance in the assessment of academics*: rewarding HEIs and researchers at all career stages for introducing innovative approaches during their individual career path; implementing a system that (i) enables the diversification and vitalisation of career paths, thereby promoting excellence in all HEI missions; (ii) acknowledges the independence and individual qualities and ambitions of academics as well as recognising team performances; (iii) emphasises quality of work over quantitative results (such as beyond number of publications and their Journal Impact Factor); (iv) encourages the practice of all aspects of Open Science, and Responsible Research and Innovation at institutional level; and (v) encourages high-quality academic leadership; these aspects need to be embedded in the assessment schemes for both organisations and individuals;
- *Dealing with brain drain*: development of strategies to promote a balanced circulation of knowledge and researchers (including processes to understand and act upon reasons for brain drain), deployment of activities to counteract brain drain and improve attractiveness, such as reforming Human Resources strategies, and improving working conditions for researchers;
- *Cloud of knowledge*: development of activities engaging HEIs to move towards capacity equipping researchers with a combination of pedagogy skills, forward-looking competencies, Open Science skills, research integrity, interdisciplinary, entrepreneurial competencies;
- *Promoting talent (skills and competences)*: ensuring training possibilities for research and research support staff with attention to promoting staff diversity; ensure exposure of staff and early career researchers to training and mentoring by persons from other sectors; actively promote re- and up-skilling through lifelong learning; ensuring implementation of gender balance strategies at all levels.

d) **Reinforcing cooperation in research and innovation with other sectors, especially academia-business cooperation**, while maximising competitiveness by feeding into the innovation cycle from all sources of knowledge and types of research: Development of strategies to connect HEIs with various other actors of the innovation ecosystem, notably business to foster entrepreneurship, uptake of new technologies and innovation, and to partner with investors to facilitate access to finance. Activities funded under this action can contribute to the preparedness of higher education institutions for their strategic involvement in future actions funded through complementary EU funding programmes (e.g. EIT, EIC, MSCA):

- *Developing an innovation strategy*, including social and cultural innovation, complementing the common science agenda;
- *Strengthening innovation capacity*: this includes developing an approach to the exploitation of associated interface services such as technology transfer services, intellectual property and patent services, innovation support staff and start-up incubators; establishment of mechanism to access new or existing research or industrial

infrastructures and associated databases; establishment of cooperation arrangements; exploring alternative forms of accessing equipment and infrastructure: for instance sharing costs with other parties, renting equipment from industry, employing Augmented Reality/Merged Reality/Virtual Reality (AR/MR/VR) solutions;

- *Mainstreaming entrepreneurial mind-set of researchers*: this includes developing an approach to the organisation of courses and trainings enabling the entrepreneurial aspirations of the HEI network's researchers at early career stages with adequate knowledge, skills, and resources, including for instance SME internships; activities countering the mismatch between the skills of early career researchers and the labour market needs; establishment of joint mechanisms that incentivise entrepreneurial mind-set amongst researchers (such as access to profits from intellectual property); equipping researchers at all career stages with the necessary tools and skills to research and implement innovation: developing relevant tools and knowledge hubs, creating intersectoral collaborative spaces for exchanging experiences and sharing good practices; fostering entrepreneurial platforms such as start-up communities of early career researchers;

- *Inducing cooperation*: developing strategies to upscale or strengthen the connection of HEIs with other actors of their ecosystem such as investors or business, to facilitate access to funding for innovation and risk finance, to foster entrepreneurship and innovation skills of researchers, and connect to a broad set of stakeholders, including for social or cultural purposes; connecting the different ecosystems of the partner HEIs with the network; setup of local innovation networking platforms to induce collaboration between researchers and local businesses; establishment of cooperation agreements, creating innovation networking circles, establishing or reinforcing support mechanisms such as interface services;

- *Innovation pipeline development*: development of offensive strategies to attract investment in Europe; deployment of an innovation detection scheme for potential innovations or innovators among local or network-wide research projects; piloting activities promoting collaboration with research and technology organisations and business sector, supporting networking and mentoring programmes for researchers.

e) **Transition to knowledge- and digitally-driven HEIs, conducting Open Science:** open access to publications, and other research outputs, research data management (FAIR principles), public/societal engagement, research integrity, systems incentivising and rewarding individuals and teams that practice Open Science, skills and competences for future jobs in industry and beyond, related infrastructures.

- *Open Access and research data management*: development and implementation of strategies and institutional policies for open access to publications and other research results, for research data management, for preservation of scientific outputs; guidance to researchers on how to comply with open access and data management policies;

- *Open Science skills and education*: map the gaps in training and education on Open Science skills (e.g. regarding sound data management, preservation of scientific information, research integrity, science communication, public engagement, participatory research methodologies, etc.); support the development of new practices with data analysist, data stewards, etc.; develop training and education on Open Science skills for students, researchers and managers, at all career stages; develop the necessary programmes for professional profiles in the area of data handling technologies, data-

intensive computational science, and data stewardship; exchange good practice and mutual learning within the HEI network; coordination within the network;

- *Open Science incentives and reward*s (connected to (d) human capital module): develop academic career systems that support and reward researchers who participate in engaging with society and in a culture of sharing the results of their research, in particular by ensuring early sharing and open access to their publications and other research outputs; set up strategies and institutional policies and mechanisms that enable, incentivize, measure and reward Open Science practices; enrich research and career evaluation systems through the introduction of additional indicators and metrics that can inform assessment on openness, including but not only on the broader social impact of research and at the individual level of a researcher ('new generation metrics'); exchange best practice and mutual learning within the HEI network;
- *Open Science ambassadors*: recruitment of local Open Science ambassadors or other support officers who work dedicated on implementation and promotion of Open Science practices; exchange best practice and mutual learning within the HEI network.

f) **Embedding citizens and society**: active engagement of citizens, civil society, local and regional communities and public/cities authorities in all stages of the research and innovation process.

- *Science in society*: activities to engage with citizens, civil society and public authorities and to promote and implement science output, technology and innovation, such as focus groups, science shops, living labs, science slams, open seminars, science weeks, cooperation with museums, etc.; activities to attract young people of all backgrounds to science careers; institutional changes to governance that foster public engagement and science education at HEI and territorial levels;
- *Citizen science:* developing collaborations and sharing capacity for citizen science projects, including user-led innovation, for instance maker movement, fab labs, new approaches to co-creating innovations with society;
- *Knowledge creating teams*: research and innovation support to transnational and transdisciplinary knowledge-creating teams composed of students, researchers, citizens and professionals from public and private sector to engage in challenge-based and mission-oriented science and education activities; establishment of laboratories for institutional and ecosystem learning;
- *Outreach to children and schools*: actions to increase the next generation's creative thinking skills and resilience for changes through introducing research activities in their curricula as a standard practice;
- *Sustainable Development Goals*: development of strategies and relevant partnerships towards promotion of 'sustainable campuses', for instance by the deployment of a zero pollution strategy for the HEI, which could include a sustainable food strategy for HEI catering, change of car policy in a sustainable mobility plan, preservation of rural areas etc.;
- *Policy feedback*: strategies and development of activities to enable evidence-based policy.

BOX: Example of a possible comprehensive strategic approach in research and innovation, *which could enable progress on several 'institutional transformation modules' at once:* modernisation of the career assessment systems of research and researchers[5].

A modern assessment of researchers and research would less depend on quantitative results, going beyond the number of publications and their Journal Impact Factor or the number of PhD degrees supervised. It would put more emphasis on quality and impact of research results and allow for the cultivation of different academic profiles and diversity of careers. It would reward Open Science practices, *i.e.* sharing knowledge, data, models, etc. as early and widely as possible and collaborating with all relevant knowledge actors, including citizens. It would involve scientific integrity, reward creativity, interdisciplinary collaboration, general contribution to knowledge and solving societal challenges. It would take into account outreach to and involving of citizens, as well as the quantity and quality of collaborations with businesses and/or other relevant non-academic entities, in view of fostering open innovation and uptake of knowledge into society. It may reward internationalisation efforts (collaboration and recruitment). It should take into account the quality of teaching, general appreciation and quality of supervision of early career researchers, and the spreading and stimulation of open science skills and practices. Where relevant, also leadership roles or initiatives could be included in the assessment system.

Deploying such new systems would require a cultural change and national/regional coordination between all parties involved (higher education institutions, funders, government). It would enable the diversification of career paths of researchers, acknowledge the independence and individual qualities of academics and recognise team efforts, encourage all aspects of Open Science, stimulate knowledge transfer to society and economy, and stimulate high-quality HEI leadership.

5. Expected impact

Successful HEIs naturally are in a constant state of change, for which there is no real 'end point' in the form of a new system. The challenge is to change for the better and still be a champion for academic freedom, quality, and excellence. With this in mind, the action is expected to:

- Enhance the scientific and technological capacity of the linked institutions with a principal focus on the entities from the Widening Country/-ies;
- Help raise the excellence profile of the HEI from the Widening country as well as the excellence profile of its staff;
- Strengthen considerably the networks towards realising integrated cooperation between the participating entities in the research and innovation dimension, in synergy with the entities' education and training missions.

The potential actions per transformation module listed in this Guidance document are only provided as examples. It is entirely up to the HEI network to propose the most appropriate approach; additional modules beyond the list of 7 can be proposed; modules can be merged. Applicants are recommended to be innovative, creative, and to start from their own strengths and vision towards the future to decide on which transformation modules or other priority areas to pursue.

[5] Examples of some principles and good practices: The San Francisco Declaration on Research Assessment (DORA), https://sfdora.org; The Leiden manifesto for research metrics, http://www.leidenmanifesto.org; "Room for everyone's talent – towards a new balance in the recognition and rewards of academics", NL position paper https://www.scienceguide.nl/wp-content/uploads/2019/11/283.002-Erkennen-en-Waarderen-Position-Paper_EN_web.pdf.

Tangible initial progress towards the institutional transformation of the individual HEI and of the HEI networks in the field of research and innovation is expected, taking into account the diverse level of transformation readiness of the individual network members. Although this action in Horizon Europe is primarily meant to support the development of joint strategies and concrete action plans empowering the HEI networks in their research and innovation transformations towards the future, where possible, also the (initial) implementation or deployment of the action plans for (some of) the transformation modules is expected, where possible in connection with other relevant EU or national funding sources.

We expect to see progress both at network and at individual university level, where relevant. For instance in terms of mainstreaming of Open Science practices, the collaboration could notably be useful to lift members with less advanced practices to the next level. For instance, a strategy and action plan could be developed towards sharing of research infrastructures. The identification of specific requirements for infrastructures and resources to be shared, including access to data and information, could be followed by the development of an action plan to start sharing specific infrastructures or databases within the HEI network; the actual sharing of one or more of these infrastructures could be piloted within the Horizon 2020 project. For instance, one could envisage building new capacity at one site using national funds and complemented with funds from the other partners, at the same time ensuring interoperability and sharing of the use of that capacity at HEI network level. Where possible and feasible, the additional funding resources should be mentioned in the application.