Application Form

Selection: 2020

KA2 – Cooperation for innovation and the exchange of good practices – **Capacity Building in the field of Higher Education**

Call for Proposals 2020 - EAC/A02/2019

Multilevel Local, Nation- and Regionwide Education and Training in Climate Services, Climate Change Adaptation and Mitigation/ClimEd

DETAILED DESCRIPTION OF THE PROJECT

JOINT PROJECTS

(To be attached to the e-Form)

Please note that, in accordance with Article 193 of the "Financial Regulation Applicable to the General Budget of the Union", grants cannot be awarded retroactively. This means that activities covered by the grant can only be implemented as from the date on which the last party has signed the grant agreement.

As it might not in all cases be possible to sign the grant agreement for a selected proposal before the start date indicated in the application, the project planning should ideally cater for this possibility.

If your work plan does not allow for the necessary flexibility to adapt to such an event and/or if you have scheduled activities that must start on a particular date in the very early phase of the proposed action, you should provide a justification. The justification should explain the reasons why the activities in question cannot be postponed if the contract is not signed by 15 November 2020 or 15 January 2021) and need to take place on the foreseen date.

If this is the case for your project, you should specify below the following **(max 3000 characters)**:

- **the date on which the consortium would need to start its project** activities covered by the grant. Only from this date on costs covered by the EU grant can be incurred;
- **a detailed justification**. The justification should explain why the activities foreseen (and their corresponding costs) cannot be delayed and why such a delay would jeopardise the project's implementation.

The report of the IPCC (2018), devoted to the climate change being immense and extremely hazardous for the safe existence of mankind, was called 'an ear-splitting wake-up call to the world'. The key conclusion of this report is that 'achieving the goal of limiting global warming to 1.5C is possible,' but would require a lightning-fast and substantial transitions in the entire socio-economic system, as well as support by the wider public.
To achieve these goals, it is first and foremost required to introduce coordinated climate services around the world which could be based on the national hydrometeorological services with the possibility of coordination of the initiatives and development of new mechanisms to address the climate change challenges. Finding solution to these problems is possible only if there exist well-developed national climate service systems in all countries that would satisfy the needs of the state, economy and population.
In UA, owing to inconsistency with present-day requirements of the int. labour market and insufficient promotion of reforms, climate services are underdeveloped in the Hydrometeorological Service divisions: the Hydrometeorological Service personnel do not have required competencies to provide climate services, and close interaction with climate-dependent sectors, public bodies & municipal services has not been established, which, in turn, results in the challenges for representatives of all these organizations as regards awareness of the climate change impacts on sustainable development of the society, the economic benefits of climate information; this leads to destabilization of socio-economic situation and the country's greater vulnerability to climate change.
These challenges condition the structure and stages of the project development and are aimed at establishment of climate services in UA through a full-scale build-up of work on organization of climate education. This, with close cooperation with the specialized UA HEIs and the support on part of the leading EU partners, will help build a multi-level educational system in climate services to meet the international standards and respond promptly and efficiently to demands of the labour market. Development of this system will rely on a competency-based approach, being one of the most effective approaches in training.
In order to optimize target audience coverage, ensure continual knowledge exchange, initiate new academic opportunities and improve functioning of the institutions providing climate services, a research-and-education e-platform with a branched system of DL courses to cover all the training cycles and target groups and tools for conducting studies in climatology and climate change will be deployed.
Thus, the project is to completely solve the issues of organization of climate education and contribute to establishment and development of climate services in UA, which, in turn, is to contribute to the achievement of sustainable development goals.

PART D – Relevance of the Project

D.1 Why does the consortium undertake this project?

- *Which problem(s) will the project address in the participating Partner Countries? Why are these problems pressing?*
- *Please explain the result of the need analysis carried out for each Partner Country and for each Partner institution and provide qualitative and quantitative evidence for your results. Please refer also to studies carried out and feasibility analyses undertaken. In particular explain for each institution, why the support from the CBHE action is required. (limit 10.000 characters)*

As is put in the UN Framework Convention on Climate Change, as well as in the European Parliament Resolution on the Climate and Environment Emergency of 28 November 2019, the unprecedented and emergency climate change observed in the recent decades threatens safe existence of humankind with numerous environmental and climatic disasters, which are evinced in more frequent and intensified extreme weather conditions, sea level rise, ocean acidification, land degradation, destruction of ecosystems and loss of biodiversity.

Furthermore, the Global Framework for Climate Services (GFCS) states that the combined effects of population growth, migration, infrastructure development, and inadequate land use exacerbate the unprecedented challenges conditioned by the climate change and aggravate vulnerability of population. The report of the President of the United Nations General Assembly to the delegates of the COP25 climate conference also states that "science is unequivocal on the urgency to act, both at global and national levels." Therefore, for the purposes of sustainable development, there is an urgent need for the formation of a general and specialized climate services that would play a stabilizing role in the development of ecological systems and in the socio-economic development of humankind.

Over the 10 years, since the World Climate Conference and expansion of the GFCS, it has been recognized that climate services are fundamental to society in making decisions to cope with climate variability and change. The GFCS implementation has shown that there are large gaps in availability of competencies necessary for provision of climate services in all WMO Regions, especially the underdeveloped countries (WMO Global Framework for Climate Change: Science and Solutions - No. 67 (2), 2018), that require development of large-scale educational programmes for training and advanced training of specialists in the field of climate services.

In consequence of the above mentioned reasons, development of climate services and education in this area in many countries, especially developed ones, has been proceeding at an accelerated pace, and the projects, which contribute to adaptation of entire geographic regions or particular economic sectors in certain countries to climate change and/or aimed at mitigation of the climate change impacts, are being launched under the auspices of the World Meteorological Organization (WMO), the Intergovernmental Panel on Climate Change (IPCC) and within the framework of the GFCS.

In view of some objective factors listed below, Ukraine has lagged behind in implementation of measures to develop climate service as well as development of plans for adaptation and mitigation of the climate change impacts, which may, in the future, in the absence of necessary measures, cause either hardly recoverable or irreversible disturbance to environmental balance in Ukraine, that will result in negative consequences not only for Ukraine, but also for the territories of the neighboring states.

Those objective reasons are, primarily, onerous political and economic situation in Ukraine under which essential part of financial resources is spent on solving short-term rather than sustainable economic issues, thus triggering reduction in funding for education and other strategically important areas in the long-term development of the state.

Moreover, as compared to the EU countries, development of climate education and services in Ukraine is especially necessary since neither the Soviet Union nor Ukraine, which fully inherited all the educational priorities of the USSR, provided training for specialists of this profile. Therefore for Ukraine, as a country with insufficient climate services, implementation of this priority of the WMO strategic plan 2016-2019 (No. 1161, 2015) is relevant.

In the GFCS, one of the five components of implementation of this programme involves development of observations and monitoring of the climate system and provision of research in the field of climate

modelling and forecasting that requires development of education in climatology under two cycles of training: master and doctoral.

Adaptation of territories and entire economic branches requires, as a rule, a fundamental restructurisation of the economic and social systems, which is impossible without full support from political agencies and society, and calls for an increase in climate awareness and responsibility of each member of the society. This necessitates continuous communication with decision-makers and the wider public, as well as awareness-raising activities, which include not only dissemination of information on the climate change and its effects through mass media, but also online educational resources, being freely available and intended for various strata of the population; both directions of promoting access to the information are extremely poorly developed in Ukraine.

In addition to establishment of basic professional education in the field of climate services and broad outreach activities in Ukraine, it is necessary to establish advanced training of professionals in the field of climatology since with development of climate services sector in the context of the climate change ever more stringent requirements will be imposed on the qualifications of climatologists.

As stated in the Report of the High-level Taskforce to the GFCS (WMO Climate knowledge for action, No. 1065, 2009), many climate-sensitive economic sectors, including agriculture, municipal economy, water management, energy (renewable and non-renewable energy sources), transportation and tourism, health care, and even finance, incur enormous losses owing to the lack of climate information and knowledge on the possibilities of its application. The 2018 Report of the Global Commission on the Economy and Climate (Unlocking the Inclusive Growth Story of the 21st Century) indicates that the magnitude and frequency of extreme climate events have increased significantly, and that the losses caused by hazardous weather conditions in 2017 amounted to USD 320 bn, which is significantly higher than the average losses over the last decade which comprise USD 170 bn. Moreover, adverse weather conditions entailed thousands more casualties. As a result of the rising concentration of greenhouse gases in the atmosphere and the increase in social vulnerability to climatic conditions, the intensity and frequency of extreme weather and climate events will only increase in the future, which, in case of absence of a strategic adaptation plan, will destabilize numerous climate-dependent economic sectors and, thereafter, lead to failure in achievement of the UN sustainable development goals.

For development of these plans and their systematic introduction, as well as daily adjustment of the industry's activities depending on climate forecasts, it is necessary that each climate-dependent industry should have experienced users of climate information and services, for both the planning and the operational purposes.

Comfortable existence of humankind in all countries is determined by the following climate-dependent economic sectors, which provide the most immediate opportunities for ensuring human security and well-being: agriculture and food security, energy, construction, the transport system, municipal economy, healthcare and water management. According to the experts from climate-dependent industries (WMO Reaching Users with Climate Services. No. 60 (1), 2011), the challenges they most often face are associated either with a significant lack of climate information, or with uncertainty on the climate change impact on the sector, and they consider training, consultations and sectoral reports in the field of climate services to be the best solution to these challenges.

All of the above demonstrates that with a view to sustainable development of the society it is necessary to provide the mentioned economic sectors with courses focused on their needs for climate services.

The project proposal is aimed at establishment and development of climate services and their penetration into all climate-dependent economic spheres of Ukraine, and effective outreach activities in the interests of climate services, it proves timely and necessary not only for Ukraine, but also for the whole of the Eurasian continent, since coordination of the actions are needed at the national, regional and global levels in order to solve such large-scale problems as climate change adaptation and mitigation.

The project implies elaboration of short-, medium- and long-term competency-based approach courses with the use of pedagogical techniques of blended and e-learning for training and advanced training of specialists at various levels in the field of climatology and climate services of 1-2, 30, 60 and 120 ECTS, elaboration of short and medium-term courses for experts in climate-dependent economic sectors and decision-makers paired with maintaining the possibility of further consultations, as well as elaboration of massive open online courses for the general public to rise climate awareness.

For experts who provide climate services and experts in climate-dependent economic sectors, the module on the economics of the climate change to consider uncertainties of climate forecasts and assessment of climate risks from the climate change, which is of utmost importance when developing climate adaptation strategies, is to make an obligatory module in each course.
Since the developed courses are to be promoted through international professional (Eumetrain, Comet, Eumetcal) and non-professional (SDG Academy, FutureLearn, Udemy, Prometheus, Coursera) distance learning platforms, and an active participation in the WMO Global Campus initiative aimed at creation of a wide professional community of educational service providers and organizers of training in the WMO disciplinary fields is planned as well, then adaptation and replication of courses in the English language and other WMO languages are required. The content of 55% of the training courses will be fully translated into English.
Efficient climate services mean active communication with end users and knowledge of various aspects of functioning of climate-dependent economic sectors. Therefore, in order to properly convey the necessary information, a specialist in the field of climate services must have a command of the fundamentals of sociology and economics. For the effective use of climate information, that is of exceptional importance for the provision of high-quality climate services, ability to work with large data volumes and mastering the software for these purposes are required.
Consequently, courses in the field of climate services should be supplemented with massive open online courses in the field of sociology, economics and computer literacy, which is well in line with up-to-date world trends in development of education.

(*Please add Partner Countries/partners as appropriate)*

Please identify the target groups and their needs in each Partner Country and in each Partner Country institution. (limit 8.000 characters)

(1) Academic institutions: faculty, students (master and doctoral students)
The field of climate services is in the making: development of a framework of competencies for the provision of climate services was completed only in 2018, and the package of mandatory programmes for climate services (BIP-CS), on the basis of which the programmes for training and professional development will be developed, is still under development and is expected to be ready by 2023 (WMO Global Framework for Climate Change: Science and Solutions - No. 67 (2), 2018, WMO General Meteorological Standards and Recommended Practices No. 49). This highlights the need for training and advanced training of the teaching staff of Ukrainian academic institutions at the EU universities, the leaders in the development of a package of mandatory programmes in climate services where those programmes are tested. Subsequently, upon passing the training, the teaching staff of Ukrainian HEIs are to take part in enhancement of the package of mandatory programmes and development of university curricula and programmes for professional development on their basis.
As indicated in the Report of the High-level Taskforce towards the GFCS (WMO Climate knowledge for action, No. 1065, 2009), effective climate services will depend on maximizing potential of the existing knowledge, new research developments, and significant support from relevant research communities and strengthening of collaboration between them. Therefore, sustainable development of the territories requires numerous climate studies, both theoretical and applied, which would be aimed at establishment and development of early warning systems for extreme climate phenomena, assessment of climate risks and the uncertainty of climate forecasts, that requires drafting of the research programmes for training MSc and PhD students aimed at solving these problems.
(2) Hydrometeorological institutions in Ukraine: managers and personnel
The Report of the High-level Taskforce towards the GFCS, published in 2011 (WMO Climate Knowledge for Action. No 1065, 2011), indicated that more than a third of the staff of national hydrometeorological services has the lowest category of the required competencies. This to a large extent can be attributed to Ukraine, where the network offering services in the field of general and specialized climate services is unsatisfactorily developed and consists of uncoordinated departments at some hydrometeorological centres that perform only the basic functions for a full- and large-scale climate service in the country. In this regard it is necessary to establish departments to provide all types of climate services at all hydrometeorological institutions. Thus, , in accordance with the WMO requirements, there is a need for

training and advanced training of personnel with high level competencies in climate services.
Significant improvement to the qualification level of the personnel in performance of basic functions in the field of climate services is also required since high-quality provision of climate services is based on climate databases designed with the needs of various users taken care of, which makes it possible to quickly find, select and retrieve the required data; this presupposes that a climatologist should have skills for work with database management systems and computation-and-graphics software packages to deal with big data arrays (MathLab) as well as basic knowledge of modern programming languages widely used in climatology, such as Python and R.
(3) Political and economic public bodies
Politicians and their advisers deal with issues of concern to the general public, such as efficient functioning of markets and industry, sustainable management and conservation of natural resources, regulation of land use, healthcare, welfare and protection of the society from potential threats. Climate has an impact on each of these issues (WMO Climate knowledge for action, No. 1065, 2009).
In view of the large-scale measures on adaptation of various areas to the climate change and mitigation of its effects that will be effected for balanced development of the state, it is necessary to restructure the regional and national economies and develop strategic plans for sustainable development of these areas, which would take account of integrated planning related to climate risks and investments in actions to ensure resilience to external influences. For this purpose decision-makers in the economic and political spheres at various levels of public administration are required to be provided training that would help them to further establish appropriate policies, with regard to assessment of climate risks and uncertainties in changes that may occur under local extreme climatic events of the future.
(4) Experts in climate-dependent economic sectors
Development of a balanced sectoral economic policy, which is to consider economic benefits, sustainable management and conservation of natural resources, is largely determined by climate information and knowledge on the future status of the climate system. In this regard, experts in climate-sensitive industries are required to have broad access to the information they need, be able to competently assimilate and adapt it for planning development of the industry, and their everyday work.
Background knowledge of the climate system is also necessary when the economic sector is in transition to resource-saving and sustainable policies that rely on renewable energy sources, i.e. the climate resources of the Earth system.
(5) Experts from municipal organizations
Urban infrastructure is extremely sensitive to the hazardous effects of climate change, such as squalls, heavy rainfall and associated flooding, flash floods, heat waves, sea level rise for coastal urban infrastructure and local residents. Therefore, elaboration and implementation of local plans for adaptation and mitigation of hazardous climate change effects is a priority for urban municipalities, the experts of which must skillfully apply and interpret the calculated data on possible dangers when drawing up such plans.
(6) The general public
Climate change affects health of the general public, especially weather-dependent people. Early measures to mitigate the impact of adverse climatic conditions will reduce sickness rate and mortality of the population. Furthermore, understanding of the need for households to adapt to dangerous manifestations of the climate change requires a substantial level of awareness on the climate issue and the principal dangers associated with the climate change in the region. This will significantly reduce the economic costs of the climate change impact.
At the present stage of society development under the climate change, every person is required to have the necessary minimum knowledge of the climate system, its vulnerability and the impact of anthropogenic factors on the Earth system, which will contribute to increase in human responsibility to the generations to come and better understanding that sustainable development of humanity depends not only on state policy, but also on the personal attitude of everyone. This will make it possible to shape up public opinion in support of implementation of the plans to significantly reduce greenhouse gas emissions in Ukraine sooner.
In addition, due to the massive introduction of cyberphysical systems, the population can provide climate services with additional data that can be used for more thorough development of regional programmes for adaptation to climate change.

(7) Entrepreneurial entities, banks, investors, insurers
As is pointed out in a study conducted by the participants of the United Nations Environment Program (UNEP) Financial Initiative and the Institute for Sustainable Business Development, which is a research center of Germany, the accumulated experience and knowledge on the climate will determine competitiveness of financial and business entities in the coming years, therefore, for identifying strategic plans for development of a financial or a business entity, they are to be provided with the necessary information to be able to perform its analysis and assess economic risks when selecting various enterprise development strategies.
(8) International students wishing to improve their qualifications
Creation of multilevel courses in climate change and climate services, adapted to English and some other WMO languages, may become an opportunity for continuing education and advanced training of experts from foreign countries, since centres for education in the field of climate services, being in the setup, cannot fully satisfy the growing demand from all stakeholders.

(*Please add partner countries/partners as appropriate)*

How will the project address the relevant thematic national/regional priorities (see https://eacea.ec.europa.eu/erasmus-plus/funding/capacity-building-higher-education-2019_en) set by the Programme for its target country (ies)/region(s)? (limit 8.000 characters)

The proposal is aimed at development of competency-based curricula for continual comprehensive training of specialists in the field of climate services in Ukraine. The main project objectives include initiation and development of additional education in the field of climate change for decision-makers, experts in climate-dependent economic sectors and the general public, which is fully consistent with three national priorities:
1. Definition, implementation and monitoring of reform policies
According to the commentary of the Ministry of Education and Science of Ukraine, this priority is to be considered in the context of quality assurance for public and private sectors of higher education in the aspect of ensuring the quality of teaching and learning, particularly, through development of a system for teachers' professional development, introduction of innovative teaching and learning methods, e.g., through blended and e-learning technologies, institutionalization of new models of training, etc. Introduction of transparency tools and standards and recommendations on the quality of teaching and learning are to be highlighted, development of a national framework for the excellence of teaching and learning as a standard for the teaching and learning quality being the case in point.
Following adoption of the Law of Ukraine 'On Higher Education', a Strategy for the Reform of Higher Education to 2020 / Strategy of Reforms 2020: was developed under the auspices of the Ministry of Education and Science of Ukraine. The reform is aimed at creation of an attractive and competitive national higher education system in Ukraine, integrated into the European Higher Education Area (EHEA) and the European Research Area (ERA). Implementation of the strategy is meant for 2016-2020, with some tasks requiring a longer implementation period. Among the main objectives of the reforms there are several that are directly in line with the national priority of definition, implementation and monitoring reform policies:

- Reorganization of the higher education management system. Involvement of NGOs, professional associations, HEI associations in decision-making.
- Creation of a proper link between the labour market and the higher education system.
- Integration of Ukrainian higher education into the world and European educational and research areas.

One of the main organizational mechanisms of the reform is the combination of collegiate and managerial approaches in governance of higher education institutions; involvement of those stakeholders who take interest in achieving the strategic objective, the key processes of HEI functioning; engagement of prominent academics, the teaching staff at HEIs, who have experience of research, pedagogical and organizational cooperation with the leading universities of the world into the reform process; promoting integration of universities and research institutions through funding of the joint projects.

In the section on Creation of a higher education quality assurance system, the essence of the reform is defined as creation of a system for assurance and continuous improvement of higher education quality that meets the EHEA recommendations and standards, considers world best practices and is the main technology for achieving the educational system's compliance with the needs of the society and the individual. One of the challenges in achieving this goal is the lack of a quality assurance system for higher education at national, regional and local levels with the involvement of government, public-service and professional stakeholders. One of the main objectives of the proposal is introduction of a higher education quality assurance system based on the existing professional standards of the WMO – a specialized UN intergovernmental institution in the field of meteorology and related sciences (hydrology, climatology, agrometeorology, etc.), which as of 2015 includes 191 Member States and Territories, including Ukraine. WMO developed professional standards: Guidelines for Trainers in Meteorological, Hydrological and Climate Services (WMO No. 1114), WMO Guidelines on Generating a Defined Set of National Climate Monitoring Products (WMO No. 1204), Climate Services for Supporting Climate Change Adaptation Supplement to the Technical Guidelines for The National Adaptation Plan Process (WMO-No. 1170), which are to form the basis of retraining and advanced training programmes at the regional climate service centre on the premises of Odessa State Environmental University.

Among the necessary steps to be taken under of the new Law of Ukraine 'On Higher Education' there adduced the necessity of conducting relevant training sessions, study visits to leading HEIs, application of a competence-based approach to planning of educational programmes at HEIs, etc. P. 3.7. 'Enhancement of the higher education management' of the 'Strategy for the Reform ...' indicates the need to develop professional development programmes for HEI administrative staff based on the EU advanced experience. P. 3.8 is specifically dedicated to internationalization of higher education. The purpose and the essence of the reform consist in formation of a system of higher education in Ukraine being clear and open to the international community through its integration into the European Higher Education Area and the European Research Area; ensuring competitiveness of HEIs through support of international cooperation in higher education, participation of HEIs in international educational and research programmes, and academic mobility programmes; enhancement of the capacity of HEIs through implementation of the outcomes of international educational and research projects in Ukraine at the national and institutional levels. Therefore, this corresponds to one of the project objectives, in particular, internationalization of training and development of mobility programmes, including 'climate-neutral forms of mobility' for students, teachers and researchers, as a component of the Fourth Generation University, organization of cooperation with leading EU universities in the field of climate services and distance learning.

A system of educational programmes for climate services will be implemented in Ukraine by means of blended and e-learning technologies, which is in line with p. 3.9. 'Professional development of teachers' of the Strategy for the Reform of Higher Education to 2020, which includes teaching students modern scientific knowledge by means of the advanced educational and information technologies. Creation of an innovative research-and-education platform 'Climate Services' fully agrees with the task of working out a set of fundamentally new models for professional development of academic staff, which are grounded on the multivariate schemes of organization and content of training, promotion of best educational practices, and, in particular, imply mastering methods and technologies for development of research and innovation competence. On the other hand, development of courses and syllabi in climate services implies a direct focus on the needs of a particular sector, such as agriculture, forestry, fisheries and veterinary medicine; health care; transport, which are most vulnerable to the adverse effects of climate change and require training and advanced training for highly qualified professionals by means of new methodologies and technologies.

One of the key project objectives is to develop massive open online courses in the field of the climate change and adaptation to it for the general public with regard to the concepts of lifelong learning which is in correspondence with the priority of Development of school and vocational education at post-secondary non-tertiary education level; this is also one of the priorities in Conceptual frameworks for reforming public funding and management of higher education institutions (https://mon.gov.ua/en/osvita/visha-osvita/forum-vishoyi-osviti/koncepciya-reformuvannya-vishoyi-osviti), where there is a particular task on approval of the procedure for awarding educational qualifications by the results of non-formal and informal education.

The courses will contribute to the rise in climate awareness and environmental responsibility among the population; due to accessibility of the courses, they will promote development of informal continuing education upon leaving secondary or vocational school.

(*Please add Partner Countries/regions as appropriate)*

D.2 Aims and objectives

- *What does the proposal aim at in general? What are the project's specific objectives?*
- *Explain how the specific objectives of the project address the problems mentioned in Part D1 and the needs of each target group in each Partner Country. Demonstrate also that the set objectives are realistic and feasible in the national and institutional context(s).*
  (limit 8.000 characters)

The proposal is aimed at development of competency-based curricula for continuous comprehensive training of specialists in the field of climate services in Ukraine as well as initiation and development of additional education in climate change for decision-makers, experts in climate-dependent economic sectors and the wider public, which are to contribute to stabilization of the national economy in the face of the climate change and its adaptation to the upcoming climate change.
The project's specific objectives:
1. Development of competency-based concepts on professional education in the field of climate services and additional education for experts in climate-dependent economic sectors with regard to the existing European experience in this field.
Application of a competency-based approach, which is to form the basis for development of learning concepts, the relevant curricula and methodological support in the field of climate services, will help to create practice-oriented courses intended for meeting the needs of the modern labour market in Ukraine and adapted to the needs of stakeholders in various economic sectors. In addition, due to the regular monitoring of educational needs, as one of the most important stages of the competency-based approach, it will be possible to consistently monitor the quality of the courses being created, their compliance with the requirements of the time and the labour market, which will help, if necessary, change and modernize the courses rather quickly. Consideration of the EU experience will make it possible to standardize the curricula in accordance with the WMO requirements (BIP-CS standard) and the competencies framework for climate services, which will increase demand for the specialists in the international labour market and improve their competitiveness. Experience of the EU colleagues will help adapt the competency framework for personnel involved in the provision of climate services to the specific requirements of Ukraine and its particular regions.
Standardization of curricula and continual experience exchange at the international level will ensure creation of a common repository of courses and methodological support in the field of climate services, which will make it possible to implement joint (network) educational programmes and virtual mobility, thus providing access to high-quality training with the assistance of educational service market leaders in any country. The WMO Global Campus can be used as an international platform for testing courses adapted to the English language environment and other WMO languages for training and advanced training of personnel in the field of climate services to deploy the resources of the entire world hydrometeorological community for exercising quality control and significant adaptation of the curricula to end-user needs.
Furthermore, continual and close cooperation of the international project consortium coupled with support of the WMO will ensure creation and regular update of user-centric climate data banks, which can further be used for the purposes of general and specialized climate services, as well as various studies in the field of climatology to develop national and regional strategic plans for adaptation to the climate change and mitigation of the climate change effects.

2. Development of teaching and methodological materials, elaboration of distance and blended learning courses in order to form methodological support for the continual and comprehensive training of specialists in the field of climate services.
It is on the basis of the developed competency-oriented concepts and by the instrumentality of up-to-

date educational strategies and tactics that educational and methodological content will be created for multi-level online, offline and blended learning courses for the specialists in general and specialized climate services of various levels,. A flexible, easily adaptable to the needs of users system of created courses for integrated and comprehensive training will be supplemented by courses aimed at development of transferrable skills and needed for communication with the end users of climate information, work with databases and provision of consulting services for climate-dependent industries, business entities and decision-makers.
It is due to provision of consulting services for decision-makers, which are to ensure drafting and implementation of strategic plans for adaptation and mitigation of the climate change effects at various levels of public administration, that the elaborated courses in the field of climate services will establish conditions for introduction of early warning systems for extreme weather events and for consideration of climate risks in planning economic activities of various nature. This, to a large extent, will contribute to the stable socio-economic development of the regions and the country as a whole.
3. Development of blended learning courses in the field of climate change and adaptation to it for decision-makers, as well as massive open online courses in the same area for experts in climate-dependent economic sectors.
The courses offered will help decision-makers to faster respond to the climate challenges, make decisions at a qualitatively new level, thus bettering adaptation of the state to the climate change at various administrative and functional levels. Many business structures, due to availability of trained experts, will be able to conduct a more competent and balanced environmental policy, which may contribute to mitigation of the climate change impacts, control and adapt development in an economic sector or at an enterprise competently, with regard to the climate change.
Active interaction of climatologists with political bodies and economic entities will improve the management of climate and socio-economic information and facilitate coordination of actions of all scales and at all state levels.

4. Development of massive open online courses in the field of the climate change and adaptation to it for the wider public.
Such courses will contribute not only to obtaining new knowledge and acquisition of new skills, i.e. development of a person's potential in line with the concept of lifelong learning, but also stipulate an increase in the level of climate awareness and environmental responsibility among the population due to availability of the courses to bring up public awareness of the climate change impacts and the capabilities for their prevention at various levels of management.
These tasks are realistic and achievable, since:
1) Odessa State Environmental University, accumulating powerful scientific and pedagogical potential, is an acknowledged leader in the post-Soviet area in training specialists in the field of hydrometeorology, including climatology. The University staff has a high potential for mastering new knowledge and technologies, the necessary creativity and desire for innovation to achieve the project objectives.
2) Close communication and interaction with the necessary sectoral HEIs will ensure development of courses focused on the needs of climate-dependent industries and consideration of the climate-induced challenges that they encounter in strategic planning of particular industries' development and in everyday activities.
3) Collaboration with the Rovira i Virgili University, which is one of the first in Europe to develop education and research in the field of climate services and which participates under the auspices of WMO in the development of an international standard for training of specialists in provision of climate services, will ensure the conformity of curricula in climate services to international standards and contribute to improvement of the quality of courses to be created.
4) The EU HEIs, being the project partners, have extensive experience in development of innovations and application of the latest educational technologies, which will make it possible for the Ukrainian part of the consortium to get acquainted with the most relevant and state-of-the-art developments in distance and blended learning.

(*Please add Partner Countries/regions as appropriate)*

Please explain how the planned activities and the expected results meet the needs of the identified target groups in the Partner Countries (limit 6.000 characters)

Application of a competence based approach in creating the basic concepts for the development of multi-level vocational education in the field of climate services will allow creating educational strategies that will be aimed at meeting the needs of certain end users of climate information, will be flexible and easily adaptable to the needs of the modern labor market and thus be able to satisfy the needs of key stakeholders.

In the framework of cooperation with Rovira i Virgili University, which was one of the first universities in Europe, where the active assistance of WMO was observed, education in the field of climate services was initiated, and whose representatives are currently active developers of the compulsory program package based on the competency framework, where the framework basis of competencies will be mastered in the field of climate services, which will allow us to take part in the development of a package of mandatory programs and maintain high standards of quality in the future for developed curricula and courses.

Cooperation with European universities, which are recognized leaders in the application of advanced information and communication educational technologies, will allow the scientific and pedagogical staff of partner universities to master innovative distance teaching technologies, which will provide a wide audience coverage and significantly improve the quality of courses created by using modern tools, voluminous electronic libraries, creating a unified educational system.

Analysis of the state and quality of the proposed general and specialized climate services in Ukraine, carried out according to standard methods based on surveys of consumers of climate information and an assessment of the educational needs of the personnel of the Hydrometeorological Services, will identify gaps in the provision of climate services and tasks that require an urgent and most thorough solution, which will further ensure competent adaptation of the framework of competencies and relevant learning outcomes to specific conditions of Ukraine. Based on the framework of competencies adapted to the conditions of Ukraine, together with the specialists of climate-dependent industries, the type of climate data required for each industry will be adjusted and strategies and plans for adaptation and mitigation of the effects of dangerous climate changes in various fields will be developed, which will contribute to more sustainable development sectors of the economy in the face of climate change. Together with stakeholders and decision makers, certain plans will be developed to adapt individual regions and the country as a whole at different levels of government, which will contribute to the sustainable development of the country.

In order to provide climate services at a qualitatively new level that meets international standards and challenges of the time, a level that is largely determined by the quality of climate information, the students must have the necessary skills and abilities to work with large amounts of data and supply the end user with the required climate information, Odessa State Ecological University should create and develop an information resource management system, including the necessary technical, software and organizational support, as well as databases in the field of climate services, the full functionality of which will be available to all partner universities. The created database can also be used to provide consulting services to various categories of users.

Based on the framework of competencies adapted to the conditions of Ukraine, and the developed strategies and plans for adapting various territories and sectors of the economy, multilevel programs for training and retraining of personnel in the field of climate services will be created and focused on the urgent needs of various territories and sectors of the economy. Each course will include a module on the economics of climate change, which will focus on assessing climate risks in various sectors of the economy and assessing the uncertainty of climate forecasts for different territories. In order to provide comprehensive and high-quality services to both various sectors of the economy and different social groups, the specialist must possess interdisciplinary competencies, as well as the necessary skills and broad-based skills that will be provided with separate modules/courses in the field of the foundations of sociology, economics and computer science.

The increase in the potential of existing knowledge and the development of new scientific research of a theoretical and applied nature, carried out by undergraduates and doctoral students of the Consortium universities, will allow us to constantly update and maintain at the modern level the educational and

methodological content of the courses, as well as constantly improve the quality of climate services.
Based on the framework of competencies adapted to the conditions of Ukraine, and the developed strategies and adaptation plans for various territories and sectors of the economy, mixed and massive open online courses will also be created for decision makers and specialists in climate-dependent areas, as well as specialists from municipal and business structures, which will allow these categories of users to competently take into account climate information in order to identify and study the impacts of climate change, assess vulnerability as a result of climate changes and preform climate risk assessment, which will contribute to a more sustainable social and economic development of the country as a whole.
The preparation of massive open online courses for the general population will help to unleash the potential of the individual and develop interdisciplinary competencies, as well as ensure the growth of climate literacy and environmental responsibility among the population, which will help to form public opinion in support of various programs to adapt to climate change and mitigate their effects.
Most of the courses being prepared will either be online courses or contain an online component, which will allow implementing a network form of educational programs implementation, which will ensure the attraction of highly qualified personnel potential from various universities and will contribute to the continuous improvement of the quality of education.

(*Please add Partner Countries as appropriate)*

How will the project and its results contribute effectively to the objectives of the action Capacity-Building in the Field of Higher Education in each targeted Partner Country? (limit 6.000 characters)

Active cooperation with leading European universities is envisaged as part of the project, which will contribute to the introduction of modern information and communication technologies and educational standards, as well as international educational standards, through the active transfer of European experience in various fields of university functioning.
As a result of working closely with European universities, online training courses/modules on climate services will be developed, which will enhance access to higher education through virtual mobility.
Courses/modules in areas that provide the broad-based skills, which will be created within the project, will help vocational education become more focused on the needs of stakeholders and different end-user categories.
Gradual promotion of ready courses on international professional distance learning platforms, such as MetEd, EUMETRAIN, EUMETCAL, as well as at WMO Global Campus, will facilitate active engagement with end users and professional communities, which will greatly enhance the quality of the courses offered, enhance the quality of the qualification improvement courses for teaching staff of the University and internationalization of higher education in the field of climate services. The next phase, following the introduction of courses on various international platforms, is to integrate higher education in the field of climate services into the European professional educational space, which will make it possible to access many teaching, scientific and scientific-methodological materials, which will greatly increase the scientific and educational potential in the field of climate services.
Development of the distance learning system will facilitate the implementation of a networked form of educational programs usage, which will allow constant exchange of advanced pedagogical methods and access for students to the highest quality teaching materials, as well as it will facilitate the establishment of continuous cooperation with universities in the European Union.
Active cooperation with representatives of the climate-dependent industries of Ukraine and other countries, which is expected in the project, as well as the creation of courses that develop skills and knowledge of a wide profile, will greatly contribute to the development of interdisciplinary competences in various fields of higher education in Ukraine. Such cooperation will help to solve such problems of higher education as weak links with various branches of the economy, which means the creation of training programs oriented to their needs and to the requirements of the modern labor market.
Since the development of climate services requires a developed database management system, the project intends to create and maintain an information management system that will not only improve the quality of training, but also the quality of scientific research, which will ensure the development of the research potential of not only Odessa State Ecological University, but also other industry universities in Ukraine, since many applied researches will require scientific resources from data of these universities.

In addition, the provision of consulting services to decision-makers, municipalities, and climate-dependent business entities for the development of adaptation plans will require comprehensive research on the establishment of early warning systems for extreme climate events, climate risk assessment and assessment of climate forecast uncertainty, which will significantly maximize the potential of existing knowledge and the number of new research developments.
All this will enhance the educational and scientific potential in higher education in the field of climate services.

(*Please add Partner Countries as appropriate)*

How do the project's objectives fit in with the modernisation and internationalisation agenda of the targeted higher education institutions in the Partner Countries and with the development strategy for higher education in each Partner Country involved in the project? (limit 6.000 characters)

In the Program of Government of Ukraine, adopted in 2019, the main problems of higher education in Ukraine were identified, which are represented by weak ties between the educational and economic spheres that affects the mismatch between education and the demands of the modern labor market; absence of a comprehensive education aimed at the development of inter- and trans-disciplinary competencies; weak development of internationalization and competitiveness of the educational sphere.
In addition, the same Program sets the following separate goal: "A Ukrainian is aware of the effects of global climate change, is taking measures to prevent them, but is ready to adapt to them", therefore, the project implementation will create educational support for meeting this governmental goal.
As part of the project, all stages of training will be organized on the basis of a competence approach that will ensure that all courses are geared to the practical needs of different categories of climate information users and stakeholders, which will provide the necessary link between universities and the labor market. Climate-related courses, complemented by courses aimed at developing broad-based skills and competences, will help students to develop interdisciplinary competences, enabling such professionals to be more flexible and better adapted to the ever-changing conditions of the labor market.
Mastering the experience of European universities in the application of information and communication technologies for the creation of massive open online courses, as well as advanced educational technologies, will allow creating an education system in the field of climate services in accordance with modern European standards, which will increase the competitiveness of graduates of Odessa State Ecological University.
The integration of the educational system in the field of climate services into the European scientific and educational space through cooperation between WMO, European and Ukrainian universities, as well as through the creation of a single educational space between these organizations, will contribute to the internationalization of education in Ukraine, improving the quality of educational services offered and increasing international recognition of teachers and students.
One of the tasks of reforming the higher education system in Ukraine is autonomy and decentralization, as well as involving public organizations and professional associations for decision-making. The creation of an educational system, which will be based on direct interaction with various categories of climate information users, stakeholders, industry universities, will contribute to the formation of the University's autonomy, as it will make it possible to develop curricula and courses in accordance with the needs of the labor market. Through massive open online courses for the general public and mixed/online courses for decision-makers and specialists in economically dependent sectors of the economy, the University may interact more widely with various organizations and associations to provide consulting services, as well as have a wider coverage of climate change issues through them.
The new reform program in the field of higher education also indicates that "in Ukraine, the adult population has virtually no access to a second higher education" and that the implementation of the reforms implies, first of all, "obtaining wider access of the adult population to non-formal and informal forms of education", according to the results of which, it is proposed to approve the list of qualifications.
One of the mechanisms, through which non-formal and informal education will be carried out, will be the educational resources created within the project (massive open online courses, mixed/online courses), involving a wide choice and access to receive such an education not only in the field of climate services,

but also in areas of sociology, economics and programming.
These courses can also be used to implement the principles of lifelong learning, widely used in international education, but very poorly implemented in Ukraine.
In the reform of higher education, the introduction of which is expected to be in 2020, it is noted that "higher education, as you know, is aimed not only at the recreation of knowledge, but also at the development of research and analytical abilities of a person". The proposed project will not only be of exceptional importance in the establishment of education in the field of climate services, but also in the intensification of scientific research in the field of climate services, due to the demand for such studies by various categories of users to determine strategies for adaptation to climate change and mitigate the effects of climate change. Such research programs will make it possible to build a three-tier system of higher education in the field of climate services, which will be the successful implementation of one of the principles of the Bologna process.

(*Please add Partner Countries/partners as appropriate)*

Please explain how the proposal will pay attention to the issues of inclusion, diversity and socio-economically disadvantaged participants and/or organisations in the Partner Countries. (limit 2.000 characters)

There are currently several groups of people who have certain difficulties in social adaptation, incl. the inability to receive a quality education with subsequent employment, in UA: persons with physical disabilities, poor people, 45+ age category, internally displaced persons.
In accordance with the Law of Ukraine 'On Higher Education' and 'Convention on the Rights of Persons with Disabilities', national education strategies should include inclusive education at all levels and LLL.
According to the national report 'Sustainable Development Goals: Ukraine 2017', relative poverty remains at 26-28% in UA. One of the priorities of state policy in overcoming poverty is to ensure equal access to education and vocational training of unemployed able-bodied citizens in order to bring them to labour market, which is facilitated by development and active introduction of DL technologies.
Implementation of LLL concept requires increased population involvement in educational programmes. At present, participation rate of the population under 70 in formal and non-formal education is about 9%. Topics of the offered courses will be widely used both for improvement of qualification for staff at Hydrometeorological Service of UA, among which about 23% have reached the retirement age, as well as for retraining of citizens over 45 to maintain their competitiveness in the labour market.
For UA, the issue of social adaptation of internally displaced persons, who, due to military conflicts, have found themselves in a situation that leads to acquisition of a new profession or retraining, in accordance with the needs of the new region of residence, is relevant. According to official statistics, in 2018, there were more than 1.5 million internally displaced persons in the country. Educating such citizens in the courses offered is one of the stages of their social adaptation, enabling them to obtain a new profession or a higher qualification at a new place of residence in a relatively short time.

D.3 Innovative character

Demonstrate why the proposal is innovative.
If it is complementary to previous/existing funded projects nationally or internationally please explain how the new proposal build on it/them and demonstrate its added value and why it is not a simple continuation thereof. (limit 2.000 characters)

Functioning educational system created by the ClimEd project will make a use and display number of innovative approaches:

- The courses will be based on the current WMO educational standards in the field of Climate Services, as well as on the approbation of the BIP-CS package that at the stage of development.
- An Interdisciplinary approach to the development of an educational system that addresses the challenge of adapting the information needs of users working in climate-dependant structures, with a

view to understanding their value and making timely use of climate information in decision-making.
- To control and assure the quality of the educational structure and the medium to be created the principle of building virtuous circles will be deployed to result in the self-inducing proactive positive effect of the established educational sistem ClimEd.

The results of innovative climatic education will be presented as:

- chat-bots for consulting services in the field of Climate Services
- microlearning: creating a base for extremely short-term target classes for specialists in fields of Climatology and climate-dependant structures that they can get information on the issues they require in the utmostly brief timespan;
- development of applications for mobile devices in order to promote knowledge in the field of Climatology, climate changes and its impact.
- use of climatological information in the IoT and AI systems to ensure functioning of smart cities, ecovillages, etc.

If the proposal builds on any previous or existing EU-funded/non-EU funded national or international activities/projects in this field, please fill the following table for each of these projects.

Reference number	159352-TEMPUS-2009-FI-JPHES		
Project dates *(year started and completed)*	2010-2013	**Programme or initiative**	TEMPUS IV
Funded by	EC		
Title of the project	**Development of Qualification Framework in Meteorology (QUALIMET)**		
Coordinating organisation	University of Helsinki (Finland)		
Partner Countries /institutions targeted by this project	UA / P4		
Website	http://www.qualimet.net/ ; http://www.qualimet.osenu.org.ua/		
Password / login if necessary for website	n/a		
(a)Summarise the project outcomes (b) Explain how ownership/copyright issues are to be dealt with (limit 2000 characters).			
The project outcomes included the development of centres of excellence (CoE) in the field of meteorology and climatology, with P4 being one of the nodes of this network. As a CoE, P4 has developed an e-library of course materials that will be used for the development of ClimEd e-courses and their modules. The relevant outcomes also include an overview of meteorological and climatological competences. P1,4 share the copyright/ownership of project results as members of the Project Consortium (under the Project Agreement).			

Reference number	544524-TEMPUS-1-2013-1-PL-TEMPUS-SMHES		
Project dates *(year started and completed)*	2013-2017	**Programme or initiative**	TEMPUS IV
Funded by	EC		
Title of the project	**Qualifications Framework in Environmental Science at Ukrainian Universities (QANTUS)**		

Coordinating organisation	Warsaw University of Life Sciences (Poland)
Partner Countries /institutions targeted by this project	UA / P4, P8, P10
Website	http://qantus.osenu.org.ua/en/
Password / login if necessary for website	n/a
(a)Summarise the project outcomes (b) Explain how ownership/copyright issues are to be dealt with (limit 2000 characters).	
The project outcomes included establishment of training centres devoted to staff retraining development and implementation of study programmes compatible with sectoral Qualifications Frameworks, incl. an International Training Centre in Environmental Science at P4. The relevant outcomes also include Qualifications Framework for Environmental Science at Ukrainian Universities developed and adopted by the MESU (P10), that will be used for the development of ClimEd courses as a methodological basis. P4, 8, 10 share the copyright/ownership of project results as members of the Project Consortium (under the Project Agreement).	

Reference number	561975-EPP-1-2015-1-FI-EPPKA2-CBHE-JP		
Project dates *(year started and completed)*	2015-2018	**Programme or initiative**	Erasmus+
Funded by	EC		
Title of the project	**Adaptive learning environment for competence in economic and societal impacts of local weather, air quality and climate (ECOIMPACT)**		
Coordinating organisation	University of Helsinki (Finland)		
Partner Countries /institutions targeted by this project	UA / P4		
Website	http://e-impact.net/en/		
Password / login if necessary for website	n/a		
(a)Summarise the project outcomes (b) Explain how ownership/copyright issues are to be dealt with (limit 2000 characters).			
The ECOIMPACT project develops a personal learning environment (PLE) for competence in economic and societal impacts of local weather, air quality and climate. This PLE features custom-tailored learning materials, “smart” weather observation instruments, and learning management software – all integrated into a single system. Such approach allows for learning in contact with a studied physical environment and develops competences required for today’s modern life. The proposal partly relies on the courses (BSc, MSc & PhD) in Meteorological Economics developed under ECOIMPACT by P1,4, besides, it is planned to use the developments on creation of PLE for the training purposes under ClimEd. P1,4 shares the copyright/ownership of project results as a member of the Project Consortium (under the Project Agreement).			

D.4 European added value

Why is there a need for cooperation with the Programme Countries in this area of activity and a funding via the Erasmus+ Programme? Why can the intended results not be achieved through national, regional or local funding in the Partner Countries? (limit 2.000 characters)

Currently, an active reform of the existing educational system is ongoing in Ukraine. One of the reform tools is application of a competency-based approach, including elaboration of practice-oriented courses aimed at meeting the needs of stakeholders in various economic sectors.
Project objectives can only be achieved with external support, where there is a sufficient experience in implementation and adaptation of such educational courses. As EU partners, the universities being leaders of modern innovative education and specializing in training personnel in the field of climate services were selected.

The University of Helsinki, Finland, was established in 1640. Since then it has become one of world's leading multidisciplinary universities with a solid international reputation of high quality teaching, research, and innovation. The University of Helsinki is within the top 1% of the research universities in the world, in particular, is known as the pioneer of climate research and one of it missions is to encourage life-long learning as a habit for securing future in the changing world
Estonian Life Science University (EMU), Tartu, is Estonia's largest provider of continuing education through a framework of the Open University (OU), which operates in the field of lifelong learning. In cooperation with the university's academic units (institutes) the OU offers continued education courses in the university's fields of competence which cover the following subject areas: agriculture, natural sciences, technology, production and engineering, and etc. Up to this day the OU has carried out more than 150 different continued education courses.

Rovira i Virgili University (URV) with Centre for Climate Change (C3) have a solid track record in official climatology training, as well as participation in professional training programmes of the WMO's Commission for Climatology.

D.5 Cross-regional cooperation

If your proposal is cross-regional, demonstrate the need for this cooperation between institutions from different regions. Please also explain the added value of this cross-regional cooperation for the targeted Partner Country institutions. (limit 2.000 characters)

not applicable

PART E – Quality of the Project Design and Implementation

E.1 Project activities and methodology

Please provide a detailed description of the activities and the working methodology to be used for achieving the objectives (including major milestones, measurable indicators, etc.). (limit 6.000 characters)

The project strategy is grounded on the formation of a competency-based concept of multilevel comprehensive education in the field of climate services, in accordance with the WMO requirements, current needs of the labour market and the lifelong learning principle that is currently being introduced into the world practice.

Operational methodology of the project will be based on the full-scale integration of a competency-based approach into all curricula and courses to satisfy the real professional needs of various target groups for training. Implementation of any competency-based approach relies on an assessment of educational needs, which in this case will be performed in accordance with the competencies framework for climate services, adapted to the conditions of Ukraine, with due regard of the state of climate services in the country and the expectations of target groups about the future content of climate services.

At the stage of assessment of the state of climate services in Ukraine completeness and quality of climate information provided to various categories of users; degree of interaction with climate-dependent industries, state and municipal services; satisfactoriness in registering prognostic climate information and its uncertainty; availability of climate risk assessment in the provision of climate services; and the activity of involvement of a hydrometeorological organization in the plans for development of climate change adaptation and mitigation actions will be given analysis.

It is in conjunction with an assessment of the development of climate services in Ukraine, that an analysis of expectations of the target groups regarding the future content of climate services is to be performed; the analysis will be based on face-to-face and written questionnaires of the representatives of sectoral HEIs and the representatives of various climate-dependent public bodies and business entities. As a result, the required types of climate information (data provision, data summary, statistical analyses and predictions, as well as targeted information products, studies and expert advice); necessary service packages (archived historical data, current climatic conditions, as well as forecasts and projections of a future status of the climate system); forms of obtaining climate information, and the needs of experts in climate-dependent industries, decision-makers, and municipal personnel for training in the field of climatology is to be determined.

The results obtained during the previous two stages will form the basis for an adaptation of the WMO competencies framework for climate services, which will include development of performance criteria, fundamental knowledge and skills that a specialist in climate services has to have, with regard to peculiarities of the regional climate and the climate change taking place in the region, as well as specifics of the functioning of economic sectors and the degree of climate service development in each region.

At the next stage of the project, on the basis of a joint analysis of the outcomes of three previous phases, the educational needs will be determined for various target groups, depending on the unit of the Hydrometeorological Service of Ukraine and the peculiarities of its functioning, the region of Ukraine and the needs of climate-dependent economic sectors in climate services. The identified educational needs will form the grounds for formation of strategies, which will make it possible for the project partners, together with the stakeholders, to determine learning outcomes, choose training solutions and options, select appropriate strategies and measures and develop systems for evaluation of learning efficiency.

The further stage of implementation involves active assimilation of the best practices of the EU partners in the modern research and educational technologies and methodologies through the developed system of physical and 'climate-neutral forms of mobility' programmes suggested in the project, and, furthermore, interaction and cooperation with the EU partners in development of training courses, and provision of the courses with the relevant teaching materials.

One of the most important stages of the project is creation of a virtual inter-university research-and-education platform in the field of climate services being an information platform on the Internet, which will facilitate intensification of research, the experience and knowledge exchange, as well as more active

cooperation of experts providing climate services and end users of the climate information.
The proposal implies elaboration of short-, medium- and long-term courses on a competency-based approach by the instrumentality of pedagogical technologies of blended and e-learning, for training specialists of various levels in the field of climatology and climate services of 1-2, 30, 60 and 120 ECTS, elaboration of short- and medium-term courses for experts in climate-dependent economic sectors and decision-makers with the possibility of their being provided further consultations, as well as creation of massive open online courses for the public at large to rise climate awareness.
Project Development Stages:
- Collection of information on the expectations of target groups regarding the future content of climate services and analysis of the current state of climate services in Ukraine (1-5 months)
- Adaptation of the framework of competencies and relevant learning outcomes to the specific conditions of Ukraine (3-8 months)
- Identification of the educational needs and creation of competence-based concepts and strategies for education in climate services on their basis, in accordance with the analysis of the current state of climate services in Ukraine and the framework of competencies adapted to the specific conditions of Ukraine (5-8 months)
- Creation of a research-and-education platform to provide education in the field of climate services for various target groups (2-35 months)
- Elaboration of multilevel courses in the field of climatology, climate change and climate services in Ukrainian (10-22 months)
- Elaboration of courses/modules to develop socio-economic and information-and-communication competencies of the experts in climate services (14-24 months)
- Elaboration of massive open online courses in climate change (19-28 months)
- Adaptation of the created courses to English and other WMO languages (15-28 months)
- Launch of particular courses in a test mode and their implementation (25-30 months), based on the created research-and-education platform.

Please demonstrate that the activities and the methodology mentioned are the most appropriate to achieve the envisaged results and that they are feasible. (limit 3.000 characters)

Within the framework of this project, in order to build a practice-oriented multi-level flexible education system in climate services and climate change adaptation satisfying the needs for training of various target groups from experts to the general public, a competency-based approach will be used. In this approach the educational process, consisting of interconnected elements, usually begins with the identification of educational needs and ends with an assessment of training and learning efficiency. Most often, the standard methods, which make it possible to obtain a comprehensive assessment reflecting the real state of affairs if a training is already provided and requires reformation and modernization, are used to assess educational needs. In the case when formation and development of the economic sector and the launch of training to provide it with specialists are assumed, there are no developed tools to assess educational needs.
In Ukraine, climate services developed over many years in accordance with the long-outdated standards of the USSR without any consideration of international requirements, new challenges of the time and needs of the labour market, therefore, in this case, standard methods for assessment of educational needs cannot be applied, since the level of mastering the necessary competencies is low, or the experts do not have experience in application of the existing competencies. As a result, other approaches should be used. In this situation, the most appropriate approach would be to conduct an analysis in three directions: 1) collection of information on the expectations of target groups regarding the future content of climate services, 2) analysis of the current state of climate services in Ukraine and 3) adaptation of the competencies framework for climate services with regard to the peculiarities of Ukraine, that, due to the complexity and comprehensiveness of the analysis, will make it possible to assess the educational needs in the most unbiased way.
Subsequently, when developing curricula and their educational and methodological content, it is planned to use APDIA system, the most widespread in the context of the competency-based approach, which includes five stages - Analysis, Planning, Development, Implementation and Assessment, as the most

effective and efficient learning system which also provides regularity and consistency of training. As part of implementation of this approach, learning objectives should be defined together with stakeholders, learning solutions should be selected, course content should be adapted to the educational needs and learning objectives, and systems for performance and learning efficiency assessment should be formed. The correct implementation of all these stages of the training organization will make the educational process flexible and practice-oriented. Application of several models for assessment of learning efficiency – the Kirkpatrick model, the Phillips model and the CIRO scheme will allow for a qualitative assessment of course content, the learning process and the final outcome, and, therefore, enhance the learning process, and the introduction of internal virtual circles in the educational process will help maintain sustainability and cost-effectiveness of training.

What concrete, tangible results are expected to be achieved at the end of the project's activities in each of the targeted Partner Countries? (limit 6.000 characters)

1 Within the framework of the project, there will be developed a general competency-based concept for organization of a multi-level system of climate education which will promptly respond to new challenges of the time and the labour market needs and will be aimed at finding solutions to the problems facing the state and the society as a whole. Based on the developed concept, strategies for elaboration of

2 curricula and courses for all target groups will be developed and then formalized as the Guidelines for development of curricula and courses in the field of climate services.

To develop a general concept of education in the field of climate services and elaborate learning strategies for various target groups, a thorough assessment of educational needs, which to a large extent determines efficiency of the educational process, is necessary. Assessment of educational needs will be made by non-standard methods and will require adaptation of the competencies framework for climate

3 services developed by the WMO Commission for Climatology. For this purpose, information on the current state of climate services and the needs of end users of climate forecasts will be collected and analysed.

Based on the analysis of the current state of climate services in Ukraine and the marketing research giving an idea of the needs of various categories of end users in climate information, the WMO competencies framework for climate services will be adapted to the unique conditions of Ukraine, taking account of institutional structures and responsibilities, technology, service levels, as well as climatic

4 events which affect the country or an area of responsibility. It is based on the resulting system of high-level competences, efficiency criteria, as well as fundamental knowledge and skills that the General Standards for Climate Services for Ukraine will be developed.

To conduct the research aimed at improvement of the quality of climate services and implement climate education in accordance with the international standards, a virtual research-and-education platform, an interactive portal of Internet resources containing traditional and multimedia educational content for

5 training in the field of climate services, climatic and relevant additional physical and geographical databases, software required for database management, and data processing, analysis and visualization, will be created and constantly maintained.

By virtue of multitasking of the research-and-education platform and its complex and well-developed structure, in order to familiarize users with all its functional capabilities, an Operation manual will be developed and implemented.

Due to cooperation and interaction with EU HEIs within the framework of an extended system of training

6 sessions, the teaching staff of Ukrainian HEIs will study the best practices of the leading EU HEIs in the field of climate services education, as well as acquire new competencies in application of various innovative technologies of distance learning, which are necessary to implement training at a fundamentally new level, in accordance with the international standards.

Relying on the analysis of educational needs and the experience gained form cooperation with the EU HEIs, the curricula will be developed by the instrumentality of a competency-based approach. The courses that will make their constituents will be elaborated for various levels of training in the field of general and special climate services, alongside the courses to form competences in climatology for experts from climate-dependent industries, decision-makers and policy makers, as well as massive open

7 online courses to enhance awareness among the general public.

8	Courses/modules which form socio-economic and ICT competencies of experts in climate services will be developed. The developed certified training courses for experts will be introduced and offered to hydrometeorologists who wish or have to acquire additional competencies in the field of climate services, which will make it possible for them to meet international professional standards. Certified courses to form competencies in the field of climatology will be offered to experts in climate-dependent industries, decision-makers and policy makers. Massive open online courses to improve climate awareness of the wider public, approved and supported by international and national organizations such as Coursera, edX, Udemy and Prometheus, will be offered to everyone via the web-sources of the stated educational platforms. Particular DL courses/modules in the field of climate services will be promoted to international professional platforms such as Global Campus, EUMETCAL and MetEd, and, if successfully implemented in these educational systems, will contribute to the integration of higher education of Ukraine into the European research and education area, internationalization of education and maintenance of high quality standards.

(*Please add Partner Countries as appropriate)*

*For all **types of activities** (curriculum development, modernisation of governance, management and functioning of HEIs; strengthening of relations between HEIs and the wider economic and social environment), for **each Partner Country institution** please provide information in Part F.2 Organisation and Activities.*

E.2 Quality control and monitoring

Please explain what mechanisms will be put in place for ensuring the quality of the project and how the evaluation will be carried out. If an external evaluation is foreseen, provide information on the purpose and expected outcomes of this evaluation. Please define the specific quality measures established, as well as the benchmarks and indicators foreseen to verify the outcome of the action. Make sure that the information in this section is consistent with the project Logical Framework Matrix. (limit 3.000 characters)

To control the quality of the outcomes/outputs, upon launching the project, several control/regulation mechanisms will be used such as:

1) the Coordinator and the Steering Committee will monitor the Project implementation through regular reports submitted by the Leaders of the Work Packages;

2) National and Local Advisory Boards designed to ensure that representatives of the HEIs, hydrometeorological centres, Ministries of Education, organizations acting as stakeholders, representatives of the general public could operatively review the project team's progress reports every six months and make recommendations for further performance of the project;

3) phased implementation of all of the work packages and introduction of the deliverables to initiate several interconnected self-sustained cycles (virtuous circles), which will ensure persistently improved quality of the project outcomes/outputs, stimulate collaboration between climate-dependent economic sectors and stakeholders, guarantee cost-effectiveness and sustainability of education and training. Implementation of general and specialized climate services in the National Hydrometeorological Services will form several external virtuous circles covering all climate-dependent economic sectors and all levels of the society's functioning and internal virtuous circles are determined by interaction of the academic institutions with sectoral Universities and climate-dependent economic sectors.

In the context of development of the virtuous circles it is also imperative to ensure high-quality assessment of course materials, the learning process and the outcomes. Since all known and widely used models for assessment of the effectiveness of training have a number of advantages and disadvantages,

in order to evaluate training effectiveness it is desirable to use a combination of models, such as the Kirkpatrick model, which shows how to turn a learning process into an effective business tool and incorporate a particular training into an organization; Phillips model that helps organizations evaluate economic benefits; the CIRO model developed by Warr, Bird and Rackham, which is focused on subjective evaluation of the training course by the participants.

In order to provide sustainable quality management of the Project at the University of Helsinki will be invited. The University of Helsinki is a leader in climate education and has significant experience in coordinating and implementing educational projects.

E.3 Budget and cost effectiveness

Please describe the strategy adopted to ensure that the proposed results and objectives will be achieved in the most economical way, and on time. Explain the principles of budget allocation amongst partners. Indicate the arrangements adopted for financial management. What sources of co-funding will be used? (limit 3.000 characters)

Project spending (in particular travel costs & staff time) are monitored by the Coordinator and the Steering Committee, also supported by national project manager (P4). The overall project budget is estimated for a total of 893.692 EUR.

Shares of the consortium members in UA being the main beneficiaries of the action are in the overall equal. The share of P4 is essentially higher since, due to its specific profile and vast experience in climatology, it has a lead role in methodological and IT support related to development of DL and blended learning courses and MOOCs. Among the EU partners the applicant university's share is the largest mainly due to the management costs intended for financial & academic coordination.

The EU grant (834.332 EUR) is requested to cover staff costs (331.424 EUR), travel costs and costs of stay (329.125 EUR), equipment costs (155.783 EUR), and subcontracting costs (18.000 EUR). The Staff Costs are allocated amongst the partners proportional to their workload, and estimated to be necessary and sufficient for successful completion of all the activities. The Travel Costs are determined by the intensity of partners' involvement in the project activities, which imply travel. The travel costs are related to the academic staff retraining mobility and the project management. Whenever appropriate, the 'climate-neutral forms of mobility', as well as the use of web- and video-conferencing facilities are assumed to minimize the mobility costs. The requirements for equipment have thoroughly been discussed during the proposal preparation stage. All the UA HEIs will receive a similar set of equipment: main desk computers, work stations for the training classes, notebooks, network, multimedia and office equipment. Peer-reviewing of curricula deliverables and external expertise on quality assurance will be subcontracted. Subcontracts will be awarded on the principle of best value for money.

Printing and publishing costs, Staff costs and Equipment costs for organisation of stakeholders' meetings, and telecommunication are covered by the consortium members (59.360 EUR). Printing and publishing will be done with the use of both the internal facilities of consortium members and the services of professional publishers to get higher quality publications. Dissemination costs include wider outreach activities to be co-funded as well.

The applicant (P1, UH) will be responsible for overall financial management. The Project Manager (PM) will be supported by the Financial Project Services of the UH. The Financial Project Services will transfer the corresponding Erasmus+ grant contribution to the beneficiaries' bank accounts in accordance with the budget breakdown, timetable and adopted procedure as an advance payment, ensure regular reporting to the PM on project finances, assist in audit and financial reporting to the funding agency. This approach facilitates timely and economical achievement of objectives.

If your project involves any "exceptional costs" related to travel, please justify them here. (limit 2.000 characters)

N/A

Please justify the equipment costs for each Partner Country Institution:

- *why the Partner Country institutions need them for the implementation of the project;*
- *their relations with the content to be developed and the specific activities to be implemented) and*
- *the estimated timeframe for their purchase as well as the estimated place where they will be located (limit 3.000 characters)*

The requirements for equipment have thoroughly been discussed at the proposal preparation stage. In the process of formulating technical specifications the consortium made a try of an advanced selection of hardware configurations that could retain usability within the period of 5-8 years. Within the 1st project year all the UA HEIs will receive a set of equipment of the similar content for training/videoconferencing rooms: Head Workstation planned for development of learning content and production of auxiliary multimedia materials; User Workstations and Interactive boards for computer classes; Network, Multimedia and Office Equipment, including Projectors in conjunction with Tablets and Web Cameras, to be used to facilitate e-learning as well as organizing webinars, web meetings, online collaboration and presentations; Notebooks and Printing Equipment represented by a reliable, simple and inexpensive in maintenance Multifunctional Printing Device of SMB class for dissemination of project deliverables - brochures, banners, posters, etc. In addition, P4-OSENU, as a lead partner in WP2 for creation of the research-and-education Platform, will require such software as: ArcGIS (the system intended for collection, storage, analysis and graphical visualization of spatial geographical, climatic, hydrological and agrometeorological data necessary to provide high-quality climate services for various economic sectors); ENVI-met for universities (to be used for simulation of any aspects of the microclimate that affect human health and ensure its comfortable existence in an urban environment, incl. planning of possible urban green and blue zones to reduce heat stress). In order to solve the issues on climate services and improve the quality of provision of end-users with climate information, OSENU, with the assistance of sectoral HEIs (P5-P9), will purchase a national Climate Database to further create a structured database designed for the needs of various target groups. Due to its specific profile, P9-ONMedU will receive 2 Notebooks for videoconferencing and dissemination purposes and 2 Tromboelastography Hardware-Software Complexes. Thromboelastographic studies for expectant mothers, maternity and gynecological patients are planned at the Department of Anesthesiology, Intensive Care and Emergency Medicine and in the Municipal Maternity Hospital No. 5 in Odessa. The study of changes in the blood coagulation system by means of such hemoviscosimeters is relevant under various complications of pregnancy, gynecological diseases, and bleeding under the climate change. Introduction of hemoviscosimetric studies in the educational process will make it possible to train master students and students of the Faculty of Postgraduate Education in this modern research method and interpret its results by doctors of any speciality at P9.

(*Please add Partner Countries as appropriate)*

***Please complete the following Logical Framework Matrix**:*

E.4 Logical Framework Matrix – LFM

Wider Objective: *What is the general objective, to which the project will contribute?*	**Indicators of progress:** *What are the key indicators related to the wider objective?*	**How indicators will be measured:** *What are the sources of information on these indicators?*		
Creation of a multilevel system of lifelong vocational training in the field of climate services (CS) in Ukraine, based on the principles of internationalization, best practice and linkages with economic sectors, as well as the initiation and development of additional education in climate change for decision-makers, experts in climate-dependent economic sectors and the general public, which contribute to stabilization of the national economy in the face of climate change and its adaptation to the upcoming climate change	• The virtual research-and-education platform "Climate service" is launched • The DL portal is launched • The courses for various levels of TRNG in CS, blended courses in climate change for decision and policy makers and experts in climate-dependent economic sectors, modules in Economics of Climate Change, modules/courses on Dev. of social, economic and ICT competencies, massive open online courses in climate change for the general public are defined	• Reports on the quality assessment of the TRNG programmes; • The certified DL courses and MOOCs available online; • Climate Service Platform Guidelines is implemented.		

Specific Project Objective/s: *What are the specific objectives, which the project shall achieve?*	**Indicators of progress:** *What are the quantitative and qualitative indicators showing whether and to what extent the project's specific objectives are achieved?*	**How indicators will be measured:** *What are the sources of information that exist and can be collected? What are the methods required to get this information?*	**Assumptions & risks** *What are the factors and conditions not under the direct control of the project, which are necessary to achieve these objectives? What risks have to be considered?*	**How the risks will be mitigated:**
• 1. Development of competency-based concepts on professional education in the field of climate services and additional education for experts in climate-dependent economic sectors (CDES), with regard to existing European experience in this field. • 2. Development of teaching and methodological materials, elaboration of distance and blended learning courses in order to form methodological support for the continuous and comprehensive training of specialists in the field of climate services.	• 1.1 An overall vision and strategis for elaboration of curricula and courses developed and formalized as guidelines for Dev. of the curricula and the courses • 2.1 The project web-site and DL Portal are launched. • 2.2. The TRNG and retraining (RETRNG) courses in climate services are offered; • 2.3 The courses on Dev. of social, economic and information and communication technology competencies are offered; • 2.4 Modules in Economics of Climate	• Guidelines on the reorganization of the National Hydrometeorological Service of Ukraine; • Guidelines on training in the field of CS; • Guidelines on Curricula Dev. in the field of CS; • the courses available for searching and registration in the project DL Portal; • the curricula of Adv. TRNG and RETRNG courses uploaded at the DL Portal, as well as promotion and e-learning materials; • the lists of learners; • reports on the quality assessment of the TRNG programmes; • the instructors' evaluation reports; • the feedback from the	• Assumptions: relative stability of the national finances in PCs; finance will be available to partners as planned. • Risks: project finance will be significantly delayed; the process of placing courses on open educational platforms may be delayed due to various technical requirements.	• Redistribution of financial facilities is possible in case of mis- and/or underperformance at each Project partner with mandatory notification of EACEA. • An advance study of the organizational and technical requirements for open educational platforms is conducted to ensure that the formats and structure of the content of the courses being developed comply with the requirements.

• 3. Development of blended learning courses in the field of climate change and adaptation to it for decision-makers, as well as massive open online courses in the same area for experts in climate-dependent economic sectors. • 4. Development of massive open online courses in the field of climate change (CC) and adaptation to it for the broad masses of the population.	Change are offered • 3.1. The blended courses in climate change for decision and policy makers and experts in climate-dependent economic sectors are offered; • 4.1. The massive open online courses in climate change for the general public are offered.	students; • Climate Service Platform Guidelines.		
Outputs (tangible) and Outcomes (intangible): *Please provide the list of concrete DELIVERABLES - outputs/outcomes (grouped in Work packages), leading to the specific objective/s.:* • WP1 • INFO collection and anal.: understanding the needs of end-users; anal. of the current state of CS; adapt. of the competency	**Indicators of progress:** *What are the indicators to measure whether and to what extent the project achieves the envisaged results and effects?* • WP1 • 1.1 Formulated end-user needs • 1.2 Anal. of current state of CS • 1.3 Adapted competency	**How indicators will be measured:** *What are the sources of information on these indicators?* • Formulated end-user needs • Guidelines on reorganization of HM Service of Ukraine for implementation of CS • Guidelines on TRNG in CS; • Identafication of educational	**Assumptions & risks** *What external factors and conditions must be realised to obtain the expected outcomes and results on schedule?* • WP1. Assumptions: active part-n of all partners and inst-l support from partner HEIs. Risks: lack of info, insufficient feedback, deficiently formulated requirements. • WP2. Risks: insufficient knowledge and practice in the use of GIS, Python, R; lack of	**How the risks will be mitigated:** • WP1. • active part-n of Rectors, Vice-Rectors and Deans in project will secure inst-l support. • WP2. • training sessions on Python and R; • additional courses on the GIS

framework; identification of Edu. needs; Dev. of the concept of a multilevel Edu.; Dev. of common Edu. strategies • WP2 • Creation of a Res. and Edu. platform: Dev. of design tasks; creation of a Telecom. system; creation and Dev. of an INFO system • WP3 • Dev. of ClimEd courses: selection of courses topics; Dev. of courses for various LVLs of lifelong education in CS; Dev. of courses on the formation of social, economic, ICT competencies for experts in the CS; Dev. of courses for experts in CDES and decision makers; Dev. of modules on the economics of CC; Dev. of MOOCs for general public	framework for CS • 1.4 Edu. needs assessed • 1.5 Concept of multi-level education in CS • 1.6 Overall Edu. strategies for CS • WP2 • 2.1 Design tasks developed • 2.2 Telecom. system created; • 2.3 INFO system created • WP3 • 3.1 CS Course Topics defined • 3.2 Courses for various LVLs of lifelong education developed • 3.3 Courses on Dev. of social, economic and ICT competencies developed • 3.4 Courses for experts in CDES and decision-	needs; • The concept of a multi-level education in CS; • Guidelines on Curricula Dev. in CS; • The CS Platform Guidelines; • Courses available for searching and registration in project DL Portal; • Curricula of Adv. TRNG courses uploaded at DL Portal, promotion and e-learning materials; • Lists of learners for Adv. TRNG courses in Climate Services; • Lists of learners for courses on Dev. of social, economic, information and communication technology competencies; • DL courses available on int. EDU platforms, such as EUMETCAL, MetEd; • DL courses/modules available as MOOCs on platforms, such as Coursera,	DEMs, geo-spatial data, digital models of built-up areas; ineffective or late equip. purchase; • WP3. Risks: the staff resistant to use of new IT & pedagogy techniques. • WP4. Risks: the staff is resistant to use of new IT and pedagogy tech-s; sectoral target groups are not open to learning in online env-t and may have low awareness of benefits the met. info may bring to them; Placing courses on open EDU platforms may be delayed due to tech. requirements. • WP5. Risks: teachers are not open to learning in online env-t; there is insufficient number of staff with good command of English. • WP6. Risks: Failure in course approval from relevant bodies - revision may be needed; Poor understanding of benefits of obtaining consultancy in HM by state auth-s & business circles may hinder influx of students and impl-n of some VCs; Delays in	application; • additional staff in the field of computer technologies to make necessary maps. • early start of procurement and purchasing procedure under control of WP6 head and Project Coordinator. • WP3. • Part-n in the local TRNGs; presenting information through active use of instrumentality provided by DISS Strategy. • WP4. • participation in the local TRNGs; • application of the whole range of tools defined by DISS Strategy; • advance study of requirements for open EDU platforms is conducted to ensure that formats & structure of content of courses being developed comply with the requirements. • WP5. • the same way of overcoming risk

• WP4 • ClimEd piloting: Impl. of courses for various LVLs of lifelong Edu. in CS and modules on Econ. of CC; Impl. of courses on the Dev. of social, economic, ICT competencies for experts in CS; Impl. of blended courses for experts in CDES and decision makers; promotion of MOOCs on Intl. and Ntl. platforms; INTRO of developed DL courses/modules on Intl. professional Edu. platforms • WP5 • Staff capacity building: TRNG sessions on applying the competency-based approach; TRNG sessions on adapting the framework of competencies; TRNG sessions on climate data processing software; TRNG	makers developed • 3.5 Modules on economics of CC created • 3.6 MOOCs for the general population created; • WP4 • 4.1 Courses for various LVLs of lifelong education in CS introduced • 4.2 Courses on Dev. of social, economic and ICT competencies introduced • 4.3 Blended courses in CC for experts in CDES and decision-makers introduced • 4.4 MOOCs implemented on Intl. and Ntl. platforms • 4.5 Developed DL courses/modules implemented on Intl. professional platforms • WP5 • 5.1 TRNG events in	edX; • Reports on conducted TRNG sessions; • Guidelines for ICT Application in project; • Strategic plan for quality improvement; • Reports on QA of TRNG programmes; • Instructors' evaluation reports; • Feedback from students • Report on quality of teaching staff TRNG; • Documents on accreditation & certification of developed courses; • Reports on evaluation of learning process by Kirkpatrick model, model V by Bruce Aaron, CIRO model, and by QAA, 2014; • Strategy & Plan for QA; • Project web site available;	planned outcome delivery • WP7. Assumptions: keeping project in line with national regulations and prof. market needs will ensure participation of Ministries of Education; national legislation in PCs will allow for Dev. and Mgmt. of int. information and DL web-portals; PIs will consider CentrEx diss. needs; efficient project Mgmt. will have positive effect on DISS. • Risks: possible changes will occur at posts in Ministries of Education; internet regulation will unfavourably change. • WP8. Assumptions: finance will be available to partners as planned, • Risks: lack of support of partner HEIs auth-s & partne	as in para. (2) for WP4; • INTRO of additional courses on study of English at PC HEIs. • WP6. • Active personal inv-t of representatives of PIs & Ministries through work in Projects groups, Local and National Advisory Boards; • Use of tools provided by DISS Strategy assures wider familiarization of auth-s and business with project progress and potential results. • A schedule of outcome delivery dates will be presented and a strict Monitoring and QC Plan will be impl-d. • WP7. • active inv-t of Ministries of Education in Project task performance is to guarantee independence from fluctuation in HR policy of the Ministries; • respective Project WGs are to choose well-established int. domains for registering Project

sessions in CS; TRNG sessions on the use of various DL technologies; TRNG sessions of staff of sectoral Univ. in CS • WP6 • QA/QC: a strategic plan for quality improvement, assurance of quality of TRNG events for teaching staff, quality assessment of developed online and offline resources, quality assurance for activity of COEs by virtuous circles (VCs), QC of the project results • WP7 • ClimEd dissemination & exploitation: the web site and promotion activities, DL Portal, dissemination & exploitation strategies, and wider outreach activities	application of competency-based approach • 5.2 TRNG sessions on Adapt. of framework of competencies • 5.3 TRNG sessions on climate data processing software; • 5.4 TRNG sessions in CS; • 5.5 TRNG events on application of DL technologies • 5.6 TRNG events on application of technologies for creation and Dev. of MOOCs • 5.7 TRNG sessions of staff of sectoral Univ. in CS • WP6 • 6.1 Strategic plan for quality Improv. developed • 6.2 Quality of TRNG events for teaching staff	• e-brochure, two e-posters, leaflets, posters, banners, e-newsletters circulated; • significant visibility of project and PIs; • number of participants of CentrEx social media groups; • project DL Portal available, with e-learning courses/modules uploaded; • project Strategy for DISS; • in-project Strategy for EXPL/SUST • post-project Strategy for EXPL/SUST &DISS; • number of DISS activities; • PA signed; • minutes of PMs, SCMs & LPM meetings; • equipment and SW purchased; • timely report submission notifications.		web-sources. • WP8. • active personal inv-t of repr-s PIs through work in Projects groups & advisory boards. • redistribution of financial facilities in case of mis- and/or underperformance with y notification of EACEA; • lineup of local project groups shall be authorized through Rector's order at each PI which to determine personal compositon

• WP8 • Project Mgmt.: Partnership Agreement, holding project meetings, overall and local coordination, purchase of required equipment and SW, and financial Mgmt.	assured • 6.3 QA of online and offline resources performed • 6.4 QA for activity of COEs by VCs provided • 6.5 QC of project performance ensured. • WP7 • 7.1 ClimEd web site launched, e-brochure, e-posters, leaflets, banners, e-newsletters circulated, media coverage ensured • 7.2 DL Portal developed, e-learning courses uploaded • 7.3 DISS&EXPL strategies developed • 7.4 Wider outreach activities organized by PIs. • WP8 • 8.1 The PA prepared and			

	signe • 8.2 Kick-off Meeting, 6 PMs, 6 SCMs, coord. visits, LPM video meetings held • 8.3 Purchase of equipment and SW ensur			
Activities: *What are the key activities to be carried out (**grouped in Work packages**) and in what sequence in order to produce the expected results?* • 1.1 End user needs statement • 1.2 Analysis of the current state of CS • 1.3 Adaptation competency framework for CS for Ukraine • 1.4 Edu. needs assessment • 1.5 Dev. of the concept of multilevel education in CS • 1.6 Dev of overall strategies for Dev. of courses in CS	**Inputs:** *What inputs are required to implement these activities, e.g. staff time, equipment, mobilities, publications etc.?* • WP 1 • Manag. staff - 20 days • Acad. staff - 110 days • Adm. staff – 70 days • WP 2 • Manag. staff - 34 days • Acad. staff - 298 days • Techn. staff – 72 days • Equipment: 7 Main PCs, 98 PC Stations for Training Classess, Network Equipment		**Assumptions |& risks** *What pre-conditions are required before the project starts? What conditions outside the project's direct control have to be present for the implementation of the planned activities?* • Assumptions: active participation of all involved partners and institutional support from partner universities, finance will be available to partners as planned. • Risks: lack of information, insufficient feedback, deficiently formulated requirements and/or needs; lack of support of partner universities authorities; lack of partners' commitment to cooperation and communication; disrupted continuity of personnel at partner universities; the teachers are not open to the learning in online	**How the risks will be mitigated:** • active participation of Rectors, Vice-Rectors and Deans in the project will secure institutional support. • active personal involvement of the representatives of the PIs through the work in the Projects groups and/or local and national advisory boards will guarantee successful dissemination of the Project outputs/outcomes; • redistribution of financial facilities is possible in case of mis- and/or underperformance at each Project partner with mandatory notification EACEA; • lineup of the local project groups shall be authorized through an order of the Rector at each PI which to determine personal composition of each task group

• 2.1 Dev. of design tasks; • 2.2 Creation of Telecom. system; • 2.3 Creation of information system • 3.1 Selection of CS course topics • 3.2 Dev. of courses for various LVLs of lifelong education • 3.3 Dev. of courses for Dev. of social, economic and ICT competencies • 3.4 Dev. of courses for experts in CDES and decision makers • 3.5 Creating modules on the economics of CC • 3.6 Creating MOOC for the general public • 4.1 INTRO of courses for various LVLs of lifelong education in CS • 4.2 Impl. of courses for Dev. of social,	• WP 3 • Acad. staff - 910 days • Adm. staff - 58 days • Co-financing: staff costs • WP 4 • Acad. staff - 330 day • Adm. staff – 45 days • Co-financing: publication of teaching materials, equipment • WP 5 • Manag. staff - 59 days • Acad. staff - 105 days • Techn. staff – 49 days • Adm. staff - 49 • Travels: • EU=>EU 21 Mfs for 147 days • PC=>EU 132 Mfs for 924 days		environment	at every PI. • application of the whole range of tools defined by the Strategy of Dissemination at the local level

economic and ICT competencies • 4.3 Impl. of blended courses for experts in CDES and decision makers • 4.4 Promotion of MOOCs on Intl. and Ntl. platforms • 4.5 Promotion of developed DL courses/modules on Intl. professional platforms • 5.1 TRNG events on the application of the competency-based approach • 5.2 TRNG sessions on adapting the framework of competencies to the conditions • 5.3 TRNG events on climate data processing software • 5.4 TRNG sessions in CS • 5.5 TRNG sessions on	• EU=>PC 10 Mfs for 70days • PC=>PC 43 Mfs for 301 days • WP 6 • Manag. staff - 35 days • Acad. staff - 196 days • Techn. staff – 35 days • Adm. staff - 35 days • Subcontracting: peer review of curricula deliverables, external expert in quality assurance • WP 7 • Manag. staff - 70 days • Acad. staff - 143 day • Techn. staff – 35 day • Adm. staff - 160 • Multimedia and Office Equipment			

application of DL technologies • 5.6 TRNG events on the application of technologies for creation and development of MOOCs • 5.7. TRNG sessions for staff of sectoral universities in CS in various economic sectors • 6.1 Dev. of strategic plan for quality improv-t • 6.2 QA of TRNG events for teaching staff • 6.3 Quality assessment of online and offline resources • 6.4 QA for activity of COEs by VCs • 6.5 QC of project results • 7.1 CentrEx web site and promotion activities	• WP 8 • Manag. staff - 407 days • Adm. staff - 72 days • Travels: • EU=>EU 9 Mfs for 44 days • PC=>EU 33 Mfs for 164 days • EU=>PC 18 Mfs for 90 days • PC=>PC 59 Mfs for 295 days • Subcontracting: External Financial Audit			

• 7.2 DL Portal • 7.3 Diss.& Expl. strategies • 7.4 Wider outreach activities • 8.1 Partnership Agreement • 8.2 Project meetings • 8.3 Overall and local coordination • 8.4 Equipment and SW Purchase • 8.5 Financial Mgmt.				

Please complete the following work plan.

E.5 Work Plan

On the following pages, please provide your work plan for each year of the proposed project

- *Please use the model provided below.*
- *Please complete a one-page work plan for each project year.*
- *For each year of your proposal, please complete a work plan indicating the deadlines for each outcome and the period and location in which your activities will take place.*
- *If needed, please insert additional rows into the work plan tables.*
- *The same reference and sub-reference numbers as used in the logical framework matrix must be assigned to each outcome and related activities.*

  Examples:

  Activity carried out in the Programme Country: **=** *(E.g. activity in France for two weeks in the first month of the project 2= under M1)*

  Activity carried out in the Partner Country (ies): ***X*** *(E.g., activity in Tunisia for three weeks in the second month of the project: 3X under M2)*

WORKPLAN for project year 1

Activities		Total duration (number of weeks)	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Ref.nr/ Sub-ref nr	Title													
1.1	Understanding End-User Needs	**10**	**2X**	**2X**	**2X**	**2X**	**2X**							
1.2	Analysis of the current state of climate services	**10**		**1X**	**1X**	**2X**	**2X**	**2X**	**2X**					
1.3	Adaptation of the competency framework	**10**			**1= 1X**	**1= 1X**	**2X**	**2X**	**1X**	**1X**				
1.4	Identification of educational needs	**5**					**1X**	**1X**	**2X**	**1X**				
1.5	Development of the concept of a multilevel practice-based education	**2**						**1X**	**1X**					
1.6	Development of overall education strategies	**4**							**1X**	**1X**	**1X**	**1X**		
2.1	Project assignments for the development of a research-and-education platform	**6**		**1= 1X**	**1= 1X**	**2X**								
2.2	Telecommunication system for the research-and-education platform	**6**				**1= 1X**	**1X**	**1X**	**1X**	**1X**	**2X**	**2X**	**2X**	**2X**
2.3	Information system for the research-and-education platform	**6**							**1= 1X**	**2X**	**2X**	**2X**	**2X**	**2X**
3.1	Selection of climate service course topics	**4**										**1X**	**1X**	**2X**
3.2	Course topics in the field of climate services, climate change adaptation and mitigation	**8**										**1= 1X**	**1= 2X**	**1= 2X**
5.1	Training sessions on the use and introduction of a competence-based approach to the learning process The faculty ready to develop curricula on the base of the Competences Framework for Climate Service	**3**		**1= 2X**										
5.2	Training sessions on adaptation of the Competency Framework for Provision of Climate Services to conditions of Ukraine, on development of climate change adaptation and mitigation strategies for various economic and other sectors	**6**		**1X**	**2X**	**2X**	**1=**							
5.3	Training events on development of competences in the use of the climate data processing software	**5**									**2X**	**2X**	**1=**	
6.1	Development of a strategic plan for quality improvement	**4**		**1=**	**2X**	**1X**								
6.2	Assurance of the quality of training events for the teaching staff	**8**			**1=**	**1=**	**1=**	**1X**	**1X**		**2=**	**1X**	**1X**	

6.5	Quality control of the project results	**20**				**2X**	**2X**	**4X**	**2X**	**2X**		**2X**	**2X**	**4X**
7.1	ClimEd web site and the promotion activities	**28**		**1= 2X**	**1= 1X**	**1= 1X**	**1= 2X**	**1= 2X**	**1= 1X**	**1= 1X**	**1= 2X**	**1= 1X**	**1= 1X**	**1= 1X**
7.2	Developed DL Portal	**10**			**1X**	**1X**	**1X**	**1X**	**1X**	**1X**	**1X**	**1X**	**1X**	**1X**
7.3	Developed dissemination and exploitation strategies	**5**		**1= 2X**	**1= 1X**									
7.4	Wider outreach activities	**10**				**1= 1X**	**1= 1X**	**1= 1X**					**1= 1X**	**1= 1X**
8.1	Preparing Partnership Agreement	**3**	**1= 2X**											
8.2	Steering Committee; General Assemblies; Local Project Management Videoconferencing	**27**	**2X**	**1= 2X**	**3X**	**2X**	**2X**	**1= 3X**	**2X**	**2X**	**3X**	**2X**	**2X**	**1= 3X**
8.4	Ensuring purchase of the required equipment and software	**24**				**2= 2X**	**2= 2X**	**2= 2X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**
8.5	Financial management	**48**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**

WORKPLAN for project year 2

Activities		Total duration (number of weeks)	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Ref.nr/ Sub-ref nr	Title													
2.2	Telecommunication system for the research-and-education platform	4	2X	1X	1X									
2.3	Information system for the research-and-education platform	24	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X
3.2	Courses for different levels of LLL in the field of Climate Service	42	1= 2X	1= 2X	1= 2X	1= 2X	1= 3X	1= 3X	1= 3X	1= 3X	1= 3X	1= 3X	3X	3X
3.3	Courses for development of social-economic and ICT competences and skills	20	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X		
3.4	Courses in climate change and the related aspects for experts in climate-dependent economic sectors, policy- and decision-makers	36		1= 1X	1= 1X	1= 2X	1= 2X	4X	4X	4X	4X	4X	3X	3X
3.5	Modules on the Climate Change Economics	22				2= 2X	1= 2X	1= 2X	2X	2X	2X	2X	2X	2X
3.6	Massive open on-line courses for enhancing climate literacy for the general public	20							1= 2X	1= 3X	1= 3X	3X	3X	3X
4.1	Implementation of courses for different levels of LLL in the field of Climate Service	10									1= 2X	1= 2X	2X	2X
4.2	Implementation of courses for development of social-economic and ICT competences	4											2X	2X
5.4	Training sessions on the Climate Services	7	2X	2X	2X	1=								
5.5	Training sessions on applying different technologies of blended/on-line learning in education	5					2X	2X	1=					
5.6	Training events on mastering technologies of massive open on-line courses development for the general public	6								2X	2X	1= 1X		
5.7	Training events in the field of Climate Service in various economic sectors for the faculty staff of sectoral universities	1												1X
6.2	Assurance of the quality of training events for the teaching staff	4			1=	1X				1=	1X			
6.3	Quality assessment of the developed online and offline resources	24	1= 1X	2X	2X	2X	2X	1= 1X	2X	2X	2X	2X	2X	1= 1X

6.4	Quality assurance for the project activity by virtuous circles	**3**										**1=**	**1=**	**1X**
6.5	Quality control of the project results	**24**	**2X**	**2X**		**2X**	**2X**	**4X**	**2X**	**2X**		**2X**	**2X**	**4X**
7.1	ClimEd web site and the promotion activities	**24**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**
7.2	Developed DL Portal	**24**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**
7.3	Developed dissemination and exploitation strategies	**6**	**1= 1X**	**1= 1X**	**1= 1X**									
7.4	Wider outreach activities	**12**			**1= 1X**		**1= 1X**	**1= 1X**			**1= 1X**		**1= 1X**	**1= 1X**
8.2	Holding project meetings	**26**	**2X**	**2X**	**3X**	**2X**	**2X**	**1= 3X**	**2X**	**2X**	**3X**	**2X**	**2X**	**4X**
8.3	Overall and local coordination	**96**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**
8.4	Ensuring purchase of the required equipment and software	**12**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**						
8.5	Financial management	**48**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**

WORKPLAN for project year 3

Activities		Total duration (number of weeks)	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Ref.nr/ Sub-ref nr	Title													
2.3	Information system to support the research-and-education platform	**14**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	
3.6	Massive open on-line courses for enhancing climate literacy for the general public	**16**	**4X**	**4X**	**4X**	**4X**								
4.1	Implementation of courses for different levels of LLL in the field of Climate Service	**12**	**2X**	**2X**	**2X**	**2X**	**2X**	**1X**	**1X**					
4.2	Implementation of courses for development of social-economic and ICT competences	**14**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**1X**	**1X**				
4.3	Implementation of courses for development of competences in the field of climatology	**20**			**2X**	**2X**	**2X**	**2X**	**3X**	**3X**	**2X**	**2X**	**2X**	
4.4	Promotion of massive open on-line courses in international and national platforms	**20**				**1= 1X**	**2= 2X**	**2= 2X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	
4.5	Promotion of developed distant-learning entire courses and particular parts of courses in international professional platforms	**20**				**1= 1X**	**2= 2X**	**2= 2X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	
5.7	Training events in the field of Climate Service in various economic sectors for the faculty staff of sectoral universities	**4**	**2X**	**2X**										
6.3	Quality assessment of the developed online and offline resources	**24**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**
6.4	Quality assurance for the project activity by virtuous circles	**24**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**	**2X**
6.5	Quality control of the project results	**24**		**2X**	**2X**	**2X**	**2X**	**4X**		**2X**	**2X**	**2X**	**2X**	**4X**
7.1	ClimEd web site and the promotion activities	**24**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 1X**	**1= 2X**	**1= 1X**	**1= 1X**	**1= 1X**
7.2	Developed DL Portal	**6**	**1X**	**1X**	**1X**	**1X**	**1X**	**1X**						
7.3	Developed dissemination and exploitation strategies	**9**			**1= 2X**	**1= 2X**	**1= 2X**							
7.4	Wider outreach activities	**12**			**1= 1X**		**1= 1X**	**1= 1X**			**1= 1X**		**1= 1X**	**1= 1X**
8.2	Holding project meetings	**27**	**2X**	**2X**	**3X**	**2X**	**2X**	**4X**	**2X**	**2X**	**4X**	**2X**	**2X**	**1= 3X**

8.3	Overall and local coordination	**96**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**	**4= 4X**
8.5	Financial management	**48**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**	**4=**

Please complete the information on each work package for your project

E.6 Work packages

Please enter the different project activities you intend to carry out in your project. Make sure that the information in this section is consistent with the project Logical Framework Matrix.

Work package type and ref.nr	**PREPARATION**		**1**
Title	Information collection and analysis		
Related assumptions and risks	**Assumptions:** 1) active participation of all involved partners and institutional support from partner universities. **Risks:** 1) lack of information, insufficient feedback, 2) deficiently formulated requirements and/or needs 3) improper adaptation of Competencies Framework for Climate Services **Ways for overcoming the risks:** 1) the Consortium was selected in view of former intensive international and network cooperation and PC partners were chosen due to their strong willingness to participate; 2) active participation of Rectors, Vice-Rectors and Deans in the project will secure institutional support; 3) involving European experts in Climate Service into adaptation of the Competencies Framework for Climate Services.		
Description	In order to develop overall education and training strategies in the field of Climate Service for different categories of target groups it is necessary to perform a detailed and comprehensive analysis of the current state of climate services in Ukraine, as well as to fit the framework basis of the World Meteorological Organization (WMO) for the climate service		
Tasks	1.1 End-user survey in order to reveal expectations of target groups towards the proposed climate services 1.2 Comprehensive analysis of current state of the Climate Service in Ukraine 1.3 Adapting the Competency Framework for Provision of Climate Services to the realities of Ukraine 1.4 Identification of educational needs according to the analysis of current state of the Climate Service in Ukraine and the Competency Framework for Provision of Climate Services adaptation to specific conditions of Ukraine 1.5 Development of the concept of Multilevel Integrated Practice-based Education in the field of Climate Services 1.6 Development of overall strategies of education and training in the Climate Services, Climate Change Adaptation and Mitigation for different target groups		
Estimated Start Date (dd-mm-yyyy)	15-11-2020	**Estimated End Date (dd-mm-yyyy)**	14-09-2021
Lead Organisation	P04		
Participating Organisation	Odessa State Environmental University, universities of applied sciences in Ukraine, leading European universities in the Climate Service education		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why*	Staff costs: Total number of days – 200 Managers - 20 Teachers - 110 Technical Staff - 0 Administrative Staff - 70		

it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.	

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**1.1.**	
	Title	Understanding End-User Needs	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	Information collection on the target groups' needs will be based on the expert valuation methodology. In addition, personal interviews and written questionnaires will be carried out in order to make an informed and complete understanding of the needs in climatic information of decision- and policy-makers such as experts in climate-dependent economy sectors, municipal officers, and representatives of financial and insurance companies, small, medium and large private enterprises. On the base of their responses, the required kinds of climatic information (e.g. data presentation, data resumé, statistical analyses and forecasts, targeted information products, research reports and experts' recommendations), necessary service packages (e.g. archived historical data, modern climate conditions, forecasts and projections of future states of a climatic system), forms of climatic information acquisition and the needs in further training of specialists in climate-dependent branches of economy, decision- and policy-makers, municipal officers, etc. will be defined.	
	Due date	14-04-2021	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☒ Other		
	Representatives of climate-dependent economy sectors, state and municipal officers, representatives of financial and insurance companies, small, medium and large businesses.		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**1.2.**	
	Title	Analysis of the current state of climate services	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☒ Service/Product
	Description	Based on collection and processing of the information on activities of the divisions of the National Hydrometeorological	

		Service of Ukraine in the area of Climate Service the completeness and quality of climatic information that is delivered to different categories of users, the degree of interaction with climate-dependent economy sectors, business structures, state and municipal services, financial and insurance companies, satisfactoriness and uncertainty level of the forecasted climatic information, availability of the climatic risks evaluation at providing the Climate Service, participatory activity of the organization in planning measures on adaptation to and mitigation of Climate Change will be analysed. In addition, the economic and climatic regional features will obviously be provided for comprehending the future trends of Climate Services. Upon completion of the detailed analysis the Guidelines on the reorganization of the National Hydrometeorological Service for implementation of climate services of Ukraine will be produced for a full-scale implementation of general and specialized climate services.
	Due date	14-06-2021
	Languages	Ukrainian and English
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☒ Other	
	Personnel and management of the divisions of the National Hydrometeorological Service of Ukraine	
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional ☒ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**1.3.**	
	Title	Adaptation of the competency framework	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☒ Service/Product
	Description	Based on implementation of the deliverables 1.1 and 1.2 the Competency Framework for Provision of Climate Services will be adapted to specific conditions of Ukraine that implies development of efficiency criteria, fundamental knowledge and skill formation taking into account peculiarities of regional climates and climate change at regional scale, as well as specific characteristics of regional economy and the degree of climate service development. On the base of the Competencies Framework adaptation the Guidelines on training in the field of Climate Service will be developed.	
	Due date	14-07-2021	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians		

	☐ Other		
	If you selected 'Other', please identify these target groups. (Max. 250 words)		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**1.4.**	
	Title	Identification of educational needs	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	Based on implementation of the deliverables 1.1-1.3 the educational needs for specialists in Climate Services and all categories of the end-users of climatic information will be specified. Assessment of educational needs will form a base for development of educational concepts and strategies oriented towards practical needs of certain regions of Ukraine and climate-dependent economy sectors for their sustainable development and safe everyday operation.	
	Due date	14-07-2021	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. (Max. 250 words)		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☐ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**1.5.**	
	Title	Development of the concept of Multilevel Practice-based Education	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	Based on implementation of the deliverables 1.3-1.4, a overall concept of a multilevel system of climate education that is to respond promptly on new challenges and labour market requirements and to focus on solving the problems the state and society are facing, will be developed.	
	Due date	14-06-2021	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff		

	☐ Librarians ☐ Other
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*
Dissemination level	☒ Department / Faculty ☐ Local ☐ National ☒ Institution ☐ Regional ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**1.6.**	
	Title	Development of overall education strategies	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☒ Service/Product
	Description	Based on implementation of the deliverable 1.5 the strategies of curricula development for all target groups will be formalized as the Guidelines on Curricula Development in the field of Climate Services.	
	Due date	14-09-2021	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☐ Local ☐ National ☒ Institution ☐ Regional ☐ International		

Please copy and paste tables as necessary.

Work package type and ref.nr	**DEVELOPMENT**	**2**
Title	Development of a Reserch-and-Education Platform	
Related assumptions and risks	**Risks:** 1) insufficient experience and knowledge on usage of full functionality of programming languages Python and R 2) insufficient knowledge and practice in the use of Geographic Information Systems (GIS); 3) lack of proper maps, digital elevation models (DEMs), geo-spatial data that are necessary for data visualization in GIS; 4) lack of digital models of built-up urban areas for modelling microclimatic conditions in the Envi-met; 5) ineffective or late purchase of equipment. **Ways for overcoming the risks:** 1) training sessions on basic programming in the Python and R and the use of their functionality for the aims of climate research; 2) introduction of additional courses on the GIS application for Climate Services in the universities in Ukraine;	

	3) involvement of additional staff in the field of computer technologies to make necessary maps; 4) inviting additional personnel for getting an information on urban topography; 5) early start of procurement and purchasing procedure under control of the WP06 leader and the Project Coordinator.		
Description	Formulation of project assignments for a development of the research-and-education platform and creation of the information and telecommunication system for continuous operation of the Climate Service research-and-education platform and providing climate services and various educational services by its means, as well as for supporting research directed towards quality improvement of climate services		
Tasks	2.1 Formulation of project assignments for development of a research-and-education platform 2.2 Development of the Information and Telecommunication System for the research-and-education platform 2.3 Working-up and further development of an information system to support the research-and-education platform including climate data archives, software for data base management and data processing, analysis and visualization		
Estimated Start Date (dd-mm-yyyy)	15-12-2020	**Estimated End Date (dd-mm-yyyy)**	14-10-2023
Lead Organisation	P04		
Participating Organisation	Odessa State Environmental University, universities of applied sciences in Ukraine, leading European universities in the Climate Service education		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Staff costs: Total number of days – 404 Managers - 34 Teachers - 298 Technical Staff - 72 Administrative Staff – 0 Equipment costs 124374 EUR Equipment: 5 Main PCs, 68 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment. Software: ArcGIS (for 50 users), simulation model ENVI-MET, Climate Database, Hardware-Software Complex ARP-01M 'MedNord'. The requirements for equipment have thoroughly been discussed during the proposal preparation stage. All the PC HEIs will receive a similar set of equipment excluding Odessa National Medical University. Due to its specific profile, P9-ONMedU will receive 2 Tromboelastography Hardware-Software Complexes. Thromboelastographic studies for expectant mothers, maternity and gynecological patients are planned at the Department of Anesthesiology, Intensive Care and Emergency Medicine and in the Municipal Maternity Hospital No. 5 in Odessa. The study of changes in the blood coagulation system by means of such hemoviscosimeters is relevant under various complications of pregnancy, gynecological diseases, and bleeding under the climate change. Introduction of hemoviscosimetric studies in the educational process will make it possible to train master students and students of the Faculty of Postgraduate Education in this modern research method and interpret its results by doctors of any speciality at P9.		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**2.1.**	
	Title	Project assignments for development of a Research-and-Education Platform	
	Type	☐ Teaching material ☐ Learning material	☐ Event ☒ Report

		☐ Training material	☐ Service/Product
	Description	The Project assignments for development of the research-and-education platform in the field of Climate Services will be set up. The Project assignments will include designing the structure of the research-and-education platform, hardware installment, identification, selection and installation of necessary software, mastering new technologies. Based on advanced information and communication technologies (ICTs), the administration system will be built up to support continuous functioning of the platform in order to deliver educational and other services in the field of Climate Services for different target groups of users.	
	Due date	14-03-2021	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☐ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**2.2.**	
	Title	The telecommunication System for the Research-and-Education Platform	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	Relying on implementation of the deliverable 2.1 a telecommunication system containing computers, communication equipment, operation systems and network applications will be created and permanently supported to guarantee stable and continuous technical operation of the research-and-education platform.	
	Due date	14-01-2022	
	Languages	Ukrainian and English	
Target groups	☐ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**2.3.**	
	Title	An Information System to support the research-and-education platform	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☒ Service/Product
	Description	Relying on implementation of the deliverables 2.1 and 2.2 an information system will be built up and developed to support collection, storing, archiving, processing of climate information, as well as its search, delivery, analysis and visualization in ways that satisfy the needs of different groups of the end-users. Since each region is featuring its unique geographic and climatic settings that can be studied only on the base of national data bases containing high-resolution spatial and temporal data, in order to solve tasks of climate service and research development for improvement of quality of climate information delivering Odessa State Environmental University will purchase the National Data Base for further creation and maintenance of structured data base in co-operation with other Ukrainian universities of applied sciences for satisfying the needs of different target group categories. Applied software packages will be installed for processing, analyzing and visualizing various types of data used in the Climate Service, and programming languages Python and R will be ported to support links with data bases, statistical data processing and graphics. For collection, storing, analysis and graphical visualization of spatial information two GIS (QGIS and ArcGIS) will be used. For modelling microclimate in urban built-up areas, that is especially important in the fields of construction, architecture, health protection and municipal economy, the multifunctional interactive model Envi-met will be used. The Climate Service Platform Guidelines will be developed and implemented, too.	
	Due date	14-10-2023	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☐ International

Work package type and ref.nr	**DEVELOPMENT**	**3**
Title	Development of ClimEd Courses	

Related assumptions and risks	**Risks:** 1) the staff resists the use of new IT and teaching technologies and techniques; 2) insufficient co-operation between the Odessa State Environmental University and other universities of applied sciences in Ukraine for making courses oriented towards the needs of the climate-dependent branches of economy or other stakeholders. **Ways for overcoming the risks:** 1) - participation in the local trainings, which will be conducted as follow-up activities to compliment and multiply the effect of the training held in the EU countries; - provision of information on implementation of the ideology, setting up and functioning of a fourth-generation university in the EU countries and the world; presenting the information through active use of the instrumentality provided by the Dissemination Strategy; 2) - the Consortium was formed from the previous intensive international and network cooperation, and PC partners were chosen due to their strong willingness to participate - broadening co-operation via joint discussions, seminars, research activities.
Description	Basing on analysis of educational needs and requirements and standards of the WMO in training specialists in the field of Climate Service, as well, the topics of courses are to be selected together with learning solutions. The courses for different education levels in the general and specialized Climate service should be established; courses or modules on developing social-economic and information and communication competences and skills in specialists in the field of Climate Service, courses on climate change, adaptations to mitigation of effects of climate change for specialists of the climate-dependent branches of economy and decision-makers will be developed, too, along with modules on the Climate Change Economics and open on-line courses for enhancing climate literacy in a wider public.
Tasks	3.1 Selection of course topics in the field of Climate Service and defining curricular solutions 3.2 Elaboration of the courses for different levels of LLL in the field of Climate Service 3.3 Elaboration of the courses for development of social-economic and information and communication competences and skills in specialists in the field of Climate Service 3.4 Elaboration of courses in climate change and the related aspects for experts in climate-dependent economic sectors, policy- and decision-makers 3.5 Development of modules on the Climate Change Economics in order to implement them in the courses of general and specialized Climate Service 3.6 Development of massive open on-line courses for enhancing climate literacy for the general public
Estimated Start Date (dd-mm-yyyy)	15-09-2021 **Estimated End Date (dd-mm-yyyy)** 14-03-2023
Lead Organisation	P02
Participating Organisation	Odessa State Environmental University, universities of applied sciences in Ukraine, leading European universities in the Climate Service education and training
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Staff costs: Total number of days – 968 Managers - 0 Teachers - 910 Technical Staff - 0 Administrative Staff - 58

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.1.**	
	Title	Course topics in the field of climate services, climate change adaptation and mitigation	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	The topics of courses for different levels of LLL in the field of Climate Service will be selected according to the educational needs specified as outcomes of the WP01. Learning solutions for each course (i.e. traditional classroom activities, on-line or combined learning, training at the working place, on-line resources for independent learning, tutorials or supervised learning) will be reasoned, as well.	
	Due date	14-11-2021	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☐ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.2.**	
	Title	Courses for different levels of LLL in the field of Climate Service	
	Type	☒ Teaching material ☒ Learning material ☒ Training material	☐ Event ☐ Report ☐ Service/Product
	Description	The courses for different levels of LLL in the field of Climate Service will be developed in order to enable and support training specialists at high level of contemporary experience in agreement with the National Qualification Framework and international standards.	
	Due date	14-11-2022	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.3.**	
	Title	Courses for development of social-economic and ICT competences and skills	
	Type	☒ Teaching material ☒ Learning material ☒ Training material	☐ Event ☐ Report ☐ Service/Product
	Description	Courses for development social-economic and ICT competences will be developed in order to form relevant skills in specialists delivering necessary climatic information to end-users with proper consulting them on interpreting the information delivered and making relevant and most economically sound solutions.	
	Due date	14-09-2022	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.4.**	
	Title	Courses in climate change and the related aspects for experts in climate-dependent economic sectors, policy- and decision-makers	
	Type	☒ Teaching material ☒ Learning material ☒ Training material	☐ Event ☐ Report ☐ Service/Product
	Description	The courses in specialists of the climate-dependent economy sectors and policy- and decision-makers will be developed to enable these target groups with procedure skills in interpreting climatic forecasts, producing climatic models and strategies towards climate change adaptation and mitigation in certain sectors of economy.	
	Due date	14-11-2022	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.5.**	
	Title	Modules on the Climate Change Economics	
	Type	☒ Teaching material ☒ Learning material ☒ Training material	☐ Event ☐ Report ☐ Service/Product
	Description	The modules on the Climate Change Economics will be developed for further incorporation to learning courses for specialists in the field of Climate Service, climate-dependent economy sectors and decision-makers, in order to enable them with skills in uncertainty appraisal of climatic forecasts, climate and economic risks assessment, and implementation of political and economic decisions for adaptation to and mitigation of effects of climate change.	
	Due date	14-11-2022	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.6.**	
	Title	Massive open on-line courses for enhancing climate literacy for the general public	
	Type	☒ Teaching material ☒ Learning material ☒ Training material	☐ Event ☐ Report ☐ Service/Product
	Description	Massive open on-line courses will be developed to enhance the general public's climate literacy in order to increase people's climatic responsibility, forming public opinion towards supporting plans of restructuring the economic system of Ukraine to meet challenges of adaptation to climate change. Moreover, dissemination of open on-line courses in Climatology among a wider public will support implementing the life-long learning principles to Ukrainian education system that enables disclosure of personality potential and forming inter-disciplinary competences that, in turn, could enhance a person's competitiveness in the labour market.	
	Due date	14-03-2023	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		

	If you selected 'Other', please identify these target groups. *(Max. 250 words)*
Dissemination level	☒ Department / Faculty ☐ Local ☒ National ☒ Institution ☐ Regional ☒ International

Work package type and ref.nr	**DEVELOPMENT**	**4**
Title	ClimEd Piloting	
Related assumptions and risks	**Risks:** 1. the staff resists the use of new IT and teaching technologies and techniques; 2. the sectoral target groups are not open to learning in the on-line environment; 3. the sectoral target groups may have low awareness of the benefits the climatological information may bring to them; 4. the process of placing courses on open educational platforms may be delayed due to various technical requirements. **Ways for Overcoming the Risks:** 1. participation in the local trainings, which will be conducted as follow-up activities to compliment and multiply the effect of the training held in the EU countries; 2. application of the whole range of tools defined by the Strategy of Dissemination at the national/regional level; 3. an advance study of the organizational and technical requirements for open educational platforms is conducted to ensure that the formats and structure of the content of the developed courses comply with the requirements.	
Description	The courses, approved by such platforms as Global Campus, EUMETCAL, MetEd, Coursera, edX, Udemy, Prometheus will offered on the websites of these platforms to everyone interested. The certified courses offered as courses for advanced training and retraining in Climate Services will be available to specialists of the National Hydrometeorological Services of Ukraine in order to master additional skills and competences in the field of Climate Services. Certified courses for mastering competences in climatology will be proposed to specialists of the climate-dependent economic sectors, decision- and policy-makers.	
Tasks	4.1 Implementation of courses for different levels of LLL in the field of Climate Service and modules on the Climate Change Economics 4.2 Implementation of courses for development of social-economic and ICT competences for specialists in the field of Climate Service 4.3 Implementation of courses for development of competences in the field of climatology for experts in the climate-dependent economic sectors, decision- and policy-makers 4.4 Promotion of massive open on-line courses in international and national platforms Coursera, edX, Udemy, Prometheus 4.5 Promotion of developed distant-learning entire courses and particular parts of courses in international professional platforms EUMETCAL, MetEd, Global Campus	
Estimated Start Date (dd-mm-yyyy)	15-08-2022	**Estimated End Date (dd-mm-yyyy)** 14-10-2023
Lead Organisation	P03	
Participating Organisation	Odessa State Environmental University, universities of applied sciences in Ukraine, leading European universities in the Climate Service education	
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why*	Staff costs: Total number of days – 375 Managers - 0 Teachers - 330 Technical Staff - 0 Administrative Staff - 45	

it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.	

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**4.1.**	
	Title	Implementation of courses for different levels of LLL in the field of Climate Service	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☐ Service/Product
	Description	Certified courses developed under WP03 tasks as further education and professional training ones for specialists in the field of Climate Service will be implemented for learning by hydrometeorologists who want or have to master additional competences in the field of Climate Services that will enable them to comply with international professional standards, in particular, the WMO's standards.	
	Due date	14-06-2023	
	Languages	Ukrainian	
Target groups	☒ Teaching staff ☒ Students ☒ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☐ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**4.2.**	
	Title	Implementation of courses for development of social-economic and ICT competences	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☐ Service/Product
	Description	Certified courses for development of social-economic and ICT competences developed under WP03 tasks will be implemented in order to support training of specialists at high state-of-art level according to international standards and new challenges.	
	Due date	14-07-2023	
	Languages	Ukrainian	
Target groups	☒ Teaching staff ☒ Students ☒ Trainees ☒ Administrative staff		

	☒ Technical staff ☐ Librarians ☐ Other
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*
Dissemination level	☐ Department / Faculty ☐ Local ☒ National ☒ Institution ☐ Regional ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**4.3.**	
	Title	Implementation of courses for development of competences in the field of climatology	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☐ Service/Product
	Description	Blended/on-line courses on forming competences in the field of climatology developed under WP03 tasks will be proposed for learning by specialists of the climate-dependent economic sectors, state and municipal officers that – owing to proper accounting climatic information for planning and operational management goals – will facilitate sustainable development of economy and the country, in general.	
	Due date	14-10-2023	
	Languages	Ukrainian	
Target groups	☒ Teaching staff ☒ Students ☒ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Local ☒ National ☒ Institution ☐ Regional ☐ International		

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**4.4.**	
	Title	Promotion of massive open on-line courses in international and national platforms	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☐ Service/Product
	Description	Developed as outcomes of the WP03 DL courses approved by international and national organizations as Coursera, edX, Udemy, Prometheus will be offered on the websites of these platforms to everyone interested.	
	Due date	14-10-2023	
	Languages	Ukrainian and English. Some platforms encourage course translation to other languages (e.g., in the Coursera currently all courses are translated to Russian), so, besides English, other UN official languages (Arabic, Spanish, Chinese, Russian and French) could be used, too.	

Target groups	☒ Teaching staff ☒ Students ☒ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☐ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**4.5.**	
	Title	Promotion of developed distant-learning entire courses and particular parts of courses in international professional platforms	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☐ Service/Product
	Description	Developed as outcomes of the WP03 DL courses/modules approved by organisations, as Global Campus, EUMETCAL, MetEd, will be offered on the websites of these platforms to everyone interested, that will facilitate integration of higher education of Ukraine into European Research Area, its further internationalization and quality improvement.	
	Due date	14-10-2023	
	Languages	English. The majority of professional platforms encourage course translation to other languages (e.g., in the MetEd currently many sources are doubled in Spanish and French), so, besides English, other UN official languages (Arabic, Spanish, Chinese, Russian and French) could be used, too.	
Target groups	☒ Teaching staff ☒ Students ☒ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☐ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

Work package type and ref.nr	**DEVELOPMENT**	**5**
Title	Staff capacity building	
Related assumptions and risks	**Risks:** 1) the teachers are not open to learning in the on-line environment; 2) there is an insufficient number of staff with good command of English. **Ways for Overcoming the Risks:** 1) application of the whole range of tools defined by the Strategy of Dissemination at the	

	local level; 2) introduction of additional courses on the study of English at the universities in partner countries.		
Description	Training of the faculty staff at partner institutions in advanced educational and information-and-communication technologies for building a flexible multi-level integrated practice-based education system in the field of Climate Services, Climate Change Adaptation and Mitigation.		
Tasks	5.1 Training events on implementing competence-based approach to curriculum development in the Earth Sciences. Introduction to the Competency Framework for Provision of Climate Services 5.2 Training sessions on adaptation of the Competency Framework for Provision of Climate Services to conditions of Ukraine, on development of climate change adaptation and mitigation strategies for various economic and other sectors 5.3 Training events on development of competences in the use of the climate data processing software 5.4 Training sessions on the Climate Services 5.5 Training sessions on applying different technologies of blended/on-line learning in education 5.6 Training events on mastering technologies of massive open on-line courses development for the general public 5.7. Training events in the field of Climate Service in various economic sectors for the faculty staff of sectoral universities		
Estimated Start Date (dd-mm-yyyy)	15-12-2020	**Estimated End Date (dd-mm-yyyy)**	14-01-2023
Lead Organisation	P01		
Participating Organisation	Odessa State Environmental University, Ukrainian sectoral universities, leading European universities in the fields of applying advanced learning, information and communication technologies		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Staff costs: Total number of days – 262 Managers - 59 Teachers - 105 Technical Staff - 49 Administrative Staff – 49 Mobility 228 225 EUR		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**5.1.**	
	Title	Training sessions on the use and introduction of a competence-based approach to the learning process The faculty ready to develop curricula on the base of the Competences Framework for Climate Service	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☐ Service/Product
	Description	Classroom and on-line training sessions will be conducted for the faculty staff to learn how to plan, deliver and assess training on a competency-based approach. Classroom training will be held at Estonian Life Science University, Tartu, Estonia. The faculty ready to use a competence-based approach in training	

	Due date	14-01-2021
	Languages	English
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other	
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*	
Dissemination level	☒ Department / Faculty ☐ Local ☒ National ☒ Institution ☐ Regional ☐ International	

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**5.2.**	
	Title	The faculty staff is ready to adapt the Competency Framework for Provision of Climate Services to the conditions of Ukraine and to develop climate adaptation plans for the territories and economic sectors in co-operation with decision-makers and representatives of the climate-dependent economic sectors.	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☐ Service/Product
	Description	The classroom and on-line training sessions will be conducted for academic staff to learn how to adapt fundamental knowledge, skills and efficiency criteria in an informed and sound way to the conditions of Ukraine taking into account institutional structures, responsibilities, technology, staff schedule, levels of service, and meteorological, hydrological and climate phenomena, which make impacts on the country or the area of responsibility. Classroom training will be held at Odessa State Environmental University, Odessa, Ukraine.	
	Due date	14-04-2021	
	Languages	English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☐ Local ☐ National ☒ Institution ☐ Regional ☐ International		

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**5.3.**	
	Title	The faculty staff is ready to use in a proper way climate data processing software for solution of tasks of the Climate Service	
	Type	☐ Teaching material ☐ Learning material	☒ Event ☒ Report

		☐ Training material	☐ Service/Product
	Description	Training events will be organized and conducted at the Institute for Atmospheric and Earth System Research of the University of Helsinki, which is carrying out multi- and interdisciplinary research in the fields of Physics, Chemistry, Earth Sciences and is a leader in applying the most advanced programming technologies and modern information visualization means that are actively used in Climatology. The Institute is successful in creation and development of learning courses of different complexity levels for enabling learners to master skills in the use of the data structuring, processing, analysis and visualization services. During the trainings academic staff trainees will master skills in Python and R programming, using the possibilities of the R-INSTAT platform and standard libraries of Python, as well as to develop competences in working with the Matlab tools in the field of the Climate Service tasks solving. Furthermore, faculty staff will get acquainted with on-line open data bases, with the formats of and the tools to work with their data in order to mine the information necessary for climate services. In addition, the faculty staff will get acquainted with application of GIS technologies in climate services. During training events the benefits and limitations of current GIS technology will be discussed, and understanding of the value of spatial data and geographic methods of spatial analysis in climatology will be improved.	
	Due date	14-10-2021	
	Languages	English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**5.4.**	
	Title	The faculty staff is ready to develop learning courses in the field of general and specialized climate services taking into account the needs of different categories of users	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☐ Service/Product
	Description	The classroom and on-line trainings assist the faculty staff to develop a system of procedural and strategic skills for processing, analysis and socio-economic interpretation of climate information in order to provide the required climate products to end users, primarily policy makers, and deliver consulting services to ensure adaptation of the population and various economic sectors to the current and the expected state of the climate system. The training allows the faculty staff to develop learning courses in	

		the field of general and specialized Climate Service. Classroom training will take place at Universitat Rovira i Virgili, Spain.
	Due date	14-03-2022
	Languages	English
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other	
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*	
Dissemination level	☒ Department / Faculty ☐ Local ☒ National ☒ Institution ☐ Regional ☐ International	

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**5.5.**	
	Title	The academic staff is ready to apply different technologies of blended/on-line learning in education and implementation of advanced educational technologies	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☐ Service/Product
	Description	The teaching staff of the Ukrainian HEIs have experience in organization of distance learning, which will facilitate provision of the training sessions. The classroom and on-line trainings will be held to make the academic staff trainees acquainted with different technologies of blended/on-line teaching and learning and their proper use in the educational process. The trainees will be informed on widely used learning strategies and tactics, as well. Classroom training will be held at Estonian Life Science University, Tartu, Estonia.	
	Due date	14-06-2022	
	Languages	English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☐ Local ☒ National ☒ Institution ☐ Regional ☐ International		

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**5.6.**
	Title	The academic staff is ready to apply innovative technology of distant learning organization in a form of massive open on-line

		courses	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☒ Service/Product
	Description	The classroom and on-line trainings on the theory and practices of organizing and development of massive open on-line courses will be held for the academic staff trainees. In particular, trainings will address peculiarities and nuances of such courses' format. The Guidelines on the Use of the Information and Communication Technologies the Project will be prepared. Classroom training will take place at Estonian Life Science University, Tartu, Estonia.	
	Due date	14-09-2022	
	Languages	English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**5.7**	
	Title	The academic staff of other sectoral Ukrainian universities is ready to apply acquired knowledge in the field of Climate Service in specialized courses	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☐ Service/Product
	Description	The classroom and on-line trainings will be held in order to make the academic staff of other universities of applied science acquainted with economic value of climatic information at its use in planning and operational activities accounting for functioning specificity of the climate-dependent branches of economy. During the training the academic staff trainees will be able to develop skills in interpreting the climatic prognostic information, to define major consequences of climate changes in a given branch of economy on the base of climatic information, and developing climate change adaptation and mitigation measures in a given branch of economy. Classroom training will be held at Bila Tserkva National Agrarian University, Ukraine.	
	Due date	14-01-2023	
	Languages	English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians		

	☐ Other
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*
Dissemination level	☒ Department / Faculty ☐ Local ☒ National ☒ Institution ☐ Regional ☐ International

Work package type and ref.nr	**QUALITY PLAN**	**6**
Title	Quality Assurance and Control	
Related assumptions and risks	**Risks:** 1) Failure in course approval from the relevant bodies - revision may be needed 2) Poor understanding of the benefits of obtaining knowledge in the field of Climate Services, Climate Change Adaptation and Mitigation by the state authorities and the business circles may hinder the influx of students and implementation of some of the virtuous circles 3) Delays in the planned outcome/output delivery **Ways of overcoming of the risks:** 1) Active personal involvement of the representatives of the PIs and the Ministries through the work in the Projects groups and/or Local and National Advisory Boards will guarantee successful implementation of the Project outputs/outcomes; 2) Active personal involvement of the representatives of the authorities and the business community in the work of the Local and National Advisory Boards will guarantee successful implementation of the Project outputs/outcomes. Use of the tools provided by the Dissemination Strategy assures wider familiarization of the state authorities and the business community with the progress of work in the project and its potential results. 3) A schedule of the outcome/output delivery dates and the milestones will be presented at the kick-off meeting and a strict Monitoring and Quality Control Plan will be implemented. In the projects' life span there planned be a certain slack time for any unexpected situation so that the end goal of the project is achieved as planned.	
Description	For continuous monitoring of the project progress and the quality of the work performed, the Coordinator of Quality Control and Monitoring, Estonian Life Science University (P3), is assigned. As a leader of WP6, P3 will oversee the monitoring system and provide for regular reports to the Coordinator. The process of quality control and monitoring will be performed in two directions: the project management level and the project activity level. The first level is closely related to WP8 - the WP6 leader will monitor timely implementation of WP8 activities, another level relates to monitoring the rest of the WPs - the role of the WP6 leader will be to monitor their timely implementation. Timely achievement of the planned project results will be verified as follows: the project participants will be provided with a list of all the planned interim results, outcomes/outputs and deliverables, including their delivery dates, as well as the main stages of the project, they will also be informed about this as they are additionally specified in course of the kick-off meeting. Mid-term progress will be monitored by the WP6 leader, who will report to the Coordinator and the Steering Committee every 6 months. Particular attention will be paid to quantitative monitoring of the planned and implemented quotas and the schedule times in order to ensure smooth project performance and efficient use of project resources. It is with this aim that monitoring visits of the Coordinator or his authorised representative to the PC HEIs will be conducted. To control the quality of the outcomes/outputs, upon launching the project, Advisory Boards consisting of representatives of the climate-dependent economic sectors, Hydrometeorological centres, Ministry of Education and Sciences, Ministry of Energy and Environmental protection, organizations acting as stakeholders, representatives of the general public, will be formed to review the project team's progress reports every six months and make recommendations for further performance of the project. Phased implementation of all of the work packages and introduction of the deliverables	

	will initiate several interconnected self-sustained cycles (virtuous circles), which will ensure persistently improved quality of the project outcomes/outputs and guarantee their cost effectiveness and sustainability. Implementation of general and specialised Climate Service by the partner institutes will form several external virtuous circles covering all levels of the society's functioning, namely provision of: 1) Implementing Climate Service into divisions of the State Hydrometeorological Service of Ukraine that by reducing social-economic losses from dangerous climate changes will demonstrate economic benefits of the Climate Service and, in turn, will encourage many users to ask for further consultancies, that, in its turn, will strengthen and develop climate services; 2) Due to specialised Climate Services the climate-dependent economic sectors will be able to build economically profitable policies that will strengthen partnership between the climate-dependent economic sectors and divisions of the State Hydrometeorological Service of Ukraine, thus leading to improvement of quality of specialised climate services; 3) Full-scale implementation of the Climate Service will lead to rising public awareness and support of Climate Change Adaptation measures that, in turn, will stimulate further spreading of climate services to all aspects of human life. Internal virtuous circles are determined by interaction of the divisions of the State Hydrometeorological Service of Ukraine with the partner institutes and will imply the following: 1) Studying at the Odessa State Environmental University will motivate decision-making persons to implement strategies of adaptation to and mitigation of climate changes that will facilitate balanced and sustainable social and economic development of communities and municipalities. Positive experience will motivate other decision-making persons and other stakeholders to study in the partner institutes, which, in turn, will enhance the university's financial income from educational services, therefore technical base will be modernised and quality of education will increase, as well; 2) Climate-dependent business and financial structures, considering the recommendation of own staff trained in the partner institutes, will be able to build up economically profitable policies of enterprises that will lead to increase in interest and incoming flow of students for getting new practical skills in the field of Climatology; 3) Education quality improvement in the partner institutes will enhance competitiveness and adaptiveness of a specialist with a higher education degree to new challenges of the labour market that will an example and a stimulus for obtaining a university degree by other entrants. Incoming costs of specialists training and further education will make the university's technical facilities improved that will lead to further improvement of quality of education. In the context of the Virtuous Circle formation, qualitative assessment of the course materials, the learning process and learning outcomes will be assured. Since all known and widely used models of evaluating educational efficiency possess certain strengths and shortcomings, in order to obtain adequate assessment result the application of the models combination would be the most appropriate way. Such combinatory models to be applied are: the Kirkpatrick's model that is showing how to turn a learning process into effective business instrument and incorporate a particular training into an organization; the Phillips' model that aids an organization in financial evaluation of learning results; the CIRO model oriented to a subjective evaluation of the training course by the participants. As a control/regulation mechanism, quality of the outcomes/outputs will be monitored by the Coordinator and the Steering Committee through regular reports submitted by the Work Packages Leaders. The project schedule provides a certain amount of slack time that can be used as needed for any required improvements suggested by the Coordinator and/or the Steering Committee, that also prevents any delays in achieving results.
Tasks	6.1 Development of a strategic plan for quality improvement 6.2 Assurance of the quality of training events for the teaching staff 6.3 Quality assessment of the developed online and offline resources 6.4 Quality assurance for the project activities by virtuous circles 6.5 Quality control of the project results

Estimated Start Date (dd-mm-yyyy)	15-12-2020	**Estimated End Date (dd-mm-yyyy)**	14-11-2023
Lead Organisation	P03		
Participating Organisation	All partners		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Staff costs: Total number of days – 301 Managers - 35 Teachers - 196 Technical Staff - 35 Administrative Staff – 35 Subcontracting costs 14000 EUR: 6000 EUR (Peer review of curricula deliverables), 8000 EUR (External Expert in quality assurance) Quality control of the study programmes and courses including all strategies, measures, events, and planned activities facilitates maintaining and improving the effectiveness and economic efficiency of learning. In this project, a role of Peer Reviewer of curricula deliverables and an Expert in quality assurance is assigned to the University of Helsinki, which is a renowned leader in the field of Climate Service education and has gained remarkable experience in coordination and implementation of educational projects.		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.1.**	
	Title	Quality Improvement Plan	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	This document forms a single view on the issues of the project quality. This will set up the project's quality indicators and the procedures to reach these indicators.	
	Due date	14-03-2021	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☒ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	Managers		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.2.**	
	Title	Assurance of the quality of trainings for the teaching staff	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product

	Description	A report on the quality of the teaching staff training has to be compiled by the quality control team on the basis of the quality assessment of the training programmes, the instructors' evaluation reports, and the feedback from the trainees.
	Due date	14-08-2022
	Languages	Ukrainian and English
Target groups	☒ Teaching staff ☐ Students ☒ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other	
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*	
Dissemination level	☒ Department / Faculty ☐ Local ☒ National ☒ Institution ☐ Regional ☒ International	

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.3.**	
	Title	Quality assessment of the developed online and offline resources	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	Developed courses are to undergo the accreditation and certification procedures, which will be outlined in the Guidelines as a part of the Overall Course Development Strategy (deliverable 1.6). At this stage of the project the learning process will be evaluated by means of the Kirkpatrick model, the Phillips model, and the CIRO scheme.	
	Due date	14-11-2023	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☒ Students ☒ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☒ Other		
	Representatives of the national Ministry of Education and Science, Ministry of Energy and Environment Protection, coordination/attestation bodies, broader stakeholder circles representing world of profession and policy makers		
Dissemination level	☒ Department / Faculty ☐ Local ☒ National ☒ Institution ☐ Regional ☒ International		

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.4.**	
	Title	Quality assurance for the project activity by virtuous circles	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	The quality control of the project results is assured by means of Local and National Advisory Boards consisting of representatives of universities of applied sciences, divisions of the	

		Hydrometeorological Centre of Ukraine, Ukrainian Ministries, organizations acting as stakeholders, representatives of the general public.
	Due date	14-11-2023
	Languages	Ukrainian and English
Target groups	☒ Teaching staff ☒ Students ☐ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☒ Other	
	Representatives of the national Ministry of Education and Science, Ministry of Energy and Environment Protection, coordination/attestation bodies, broader stakeholder circles representing world of profession and policy makers	
Dissemination level	☒ Department / Faculty ☐ Local ☒ National ☒ Institution ☐ Regional ☒ International	

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.5.**	
	Title	Quality control of the project results	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	Stage-by-stage ensuring the quality control of the project performance in accordance with the Strategy and Plan for Quality Assurance Concept.	
	Due date	14-11-2023	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☒ Other		
	Representatives of the national Ministry of Education and Science, Ministry of Energy and Environment Protection, coordination/attestation bodies, broader stakeholder circles representing world of profession and policy makers		
Dissemination level	☐ Department / Faculty ☐ Local ☐ National ☐ Institution ☐ Regional ☐ International		

Work package type and ref.nr	**DISSEMINATION & EXPLOITATION**	**7**
Title	ClimEd dissemination and exploitation	
Related assumptions and risks	**Assumptions**: 1) finance will be available to partners as planned; 2) keeping the project in line with national regulations and professional market needs will ensure the willingness of participation on part of the Ministry of Education and Ministry of Energy and Environment Protection; 3) national legislation in the PCs on internet and online resources will allow for development and management of international information and DL web-portals;	

	4) PIs will be willing to consider ClimEd dissemination needs when planning their regular events; 5) efficient project management will have positive effect on dissemination of the projects outcomes/outputs. **Risks**: 1) project finance will be significantly delayed; 2) possible changes will occur at the posts in the Ministries of Education playing crucial role in the D&E activities; 3) internet regulation will unfavourably change (in this case the positive features of the regulation will be explored); 4) ClimEd dissemination strategy and tools won't be considered by PIs. **Ways of overcoming the risks:** 1) introduction of ASANA based system of DOCFLOW will facilitate meticulous control of the partners' financial performance to prevent underexploitation or misuse of financial resources; 2) active involvement of Ministries of Education in the process of Project task performance at various stages is to guarantee independence from fluctuation in the human resources policy of the Ministries; 3) respective workgroups of the Project Consortium are to choose well-established international domains for registering domain names of the Project web-sources as well as hosting of the Project materials; 4) active personal involvement of the representatives of the PIs through the work in the Projects groups and/or local and national advisory boards will guarantee successful dissemination of the Project outputs/outcomes.
Description	WP 7 is established to implement the dissemination and sustainability strategy at the level of project application. Its leader – P4 will be subordinated directly to the Coordinator of the project and will supervise all dissemination and sustainability activities. Each partner institution will be represented in WP7. To ensure the most effective dissemination of results diverse dissemination channels are planned: 1) Ad hoc Intensive: - the ClimEd web-site will be launched and developed by WG7.1 (M03), with the project news items and the materials from the project workshops uploaded regularly; all the academic PIs will maintain and update a dedicated project web-page; - the e-brochure on the project will be circulated among PIs and beyond the consortium; - two e-posters, layout originals for leaflets, posters and banners will be developed to be further published at the expense of internal resources of HEIs; - guides and instructions for development of new study programmes compatible with WMO standards, adapted Competency Framework for Provision of Climate Services and climate service user's requirements in Ukraine will be distributed to the HEIs in the form of e-newsletters. - analytical reports and analyses of best practices will be circulated among the sectoral Universities, Ministry of Education and Ministry of Energy and Environment Protection and beyond; - moderation of online forum discussions on project issues and deliverables, media coverage for important ClimEd events and deliverables in the institutional, local and national media will be ensured, incl. coverage in the social media (FaceBook, Google+, Twitter). The media coverage of the project events will be monitored by WG6.3 and reported to the Steering Committee twice a year. 2) Ad hoc Extensive: WG7.2 will coordinate development of the project DL Portal (starting M2), containing the e-learning courses/modules developed under WP3, compatible with WMO standards, adapted Competency Framework for Provision of Climate Services and climate service user's requirements in Ukraine (M25). 3) Embedded – the relevant Ministry of education and Ministry of Energy and Environment Protection (P08,12,16,20) will disseminate project results during annual conferences and other activities resulting from the status of these organizations. Thus, sustainability of the project results will be ensured as these partners will not cease carrying

	out dissemination activities upon the end of the project. WG7.3 is in charge of development of the strategies for dissemination and exploitation, embedding the ClimEd business plan, that will encompass the range of dissemination and exploitation activities during the project lifetime to ensure the post-project sustainability, and provide details on how the project deliverables will be maintained upon the end of the project. The in-project Strategy for Dissemination will be developed by M02, the project Strategy for Exploitation/Sustainability - by M06 and the post-project Strategy for Exploitation/Sustainability and Dissemination - by M30. WG7.4 will coordinate the wider outreach activities through information seminars, open international calls for ClimEd training events, stakeholder roundtables, business-academy conferences, dedicated ClimEd panels on conferences organised by PIs and arranging follow-up special issues of academic journals in order to reach the academic community. The HEIs, Ministry of Education and Ministry of Energy and Environment Protection, organizations acting as stakeholders, representatives of the general public and mass media will be involved in the activities.		
Tasks	7.1 ClimEd web site and promotion activities (M36) 7.2 Developed DL Portal (M25) 7.3 Developed dissemination and exploitation strategies (M02,06,30) 7.4 Wider outreach activities (M35)		
Estimated Start Date (dd-mm-yyyy)	15-12-2020	**Estimated End Date (dd-mm-yyyy)**	14-11-2023
Lead Organisation	P04		
Participating Organisation	All partners		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Staff costs: Total number of days – 408 Managers - 70 Teachers - 143 Technical Staff - 35 Administrative Staff – 160 Equipment costs: 31409 EUR All the UA HEIs will receive a set of equipment of the similar content for training/videoconferencing rooms: Head Workstation planned for development of learning content and production of auxiliary multimedia materials; User Workstations and Interactive boards for computer classes; Network, Multimedia and Office Equipment, including Projectors in conjunction with Tablets and Web Cameras, to be used to facilitate e-learning as well as organizing webinars, web meetings, online collaboration and presentations; Notebooks and Printing Equipment represented by a reliable, simple and inexpensive in maintenance Multifunctional Printing Device of SMB class for dissemination of project deliverables - brochures, banners, posters, etc		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**7.1.**	
	Title	ClimEd web site and promotion activities	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report ☒ Service/Product
	Description	- the ClimEd web-site launched and developed (M03) by P05, with the project news items and the materials from the project	

		workshops uploaded regularly; - all the academic PIs maintain and update a dedicated project web-page; - the e-brochure on the project circulated among PIs and beyond the consortium; - two e-posters, layout originals for leaflets, posters and banners developed and published; - guides and instructions for development of new study programmes compatible with WMO standards, adapted Competency Framework for Provision of Climate Services and climate service user's requirements in Ukraine distributed to the HEIs in the form of e-newsletters. - analytical reports and analyses of best practices circulated among the sectoral Universities, Ministry of Education and Ministry of Energy and Environment Protection and beyond; - ClimEd social accounts set-up by M03 (FaceBook, Google+, Twitter); - moderation of online forum discussions on project issues and deliverables, media coverage for important ClimEd events and deliverables in the institutional, local and national media ensured, incl. the coverage in social media; - ClimEd web sources and social media maintained and updated (M36)
	Due date	14-11-2023
	Languages	Ukrainian, English and other official languages of the WMO
Target groups	☒ Teaching staff ☒ Students ☒ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☒ Other	
	Representatives of the national Ministry of Education and Science, Ministry of Energy and Environment Protection, coordination/attestation bodies, broader stakeholder circles representing world of profession and policy makers	
Dissemination level	☒ Department / Faculty ☐ Local ☒ National ☒ Institution ☐ Regional ☒ International	

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**7.2.**	
	Title	Developed DL Portal	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report ☒ Service/Product
	Description	- the project DL Portal is developed starting M02 by P05 to be further maintained and updated; - the e-learning courses/modules, developed under WP3, compatible with WMO standards, adapted Competency Framework for Provision of Climate Services and climate service user's requirements in Ukraine are uploaded onto the DL Portal (M25)	
	Due date	14-11-2022	
	Languages	Ukrainian, English and other official languages of the WMO	
Target groups	☒ Teaching staff ☒ Students ☒ Trainees		

	☒ Administrative staff ☒ Technical staff ☐ Librarians ☒ Other		
	Representatives of the national Ministry of Education and Science, Ministry of Energy and Environment Protection, coordination/attestation bodies, broader stakeholder circles representing world of profession and policy makers		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**7.3.**	
	Title	Developed dissemination and exploitation strategies	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☒ Service/Product
	Description	- The project Strategy for Dissemination developed by M03; - The project Strategy for Exploitation/Sustainability developed by M06 - The post-project Strategy for Exploitation/Sustainability and Dissemination developed by M30.	
	Due date	15-05-2023	
	Languages	English	
Target groups	☒ Teaching staff ☒ Students ☐ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☒ Other		
	Representatives of the national Ministry of Education and Science, Ministry of Energy and Environment Protection, coordination/attestation bodies, broader stakeholder circles representing world of profession and policy makers		
Dissemination level	☐ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**7.4.**	
	Title	Wider outreach activities	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☒ Event ☒ Report ☒ Service/Product
	Description	- The ClimEd-related wider outreach activities, such as information seminars, open international calls for ClimEd training events, stakeholder roundtables, business-academy conferences, dedicated ClimEd panels on conferences, are organised by PIs; - The follow-up special issues of academic journals are arranged in order to reach the academic community.	
	Due date	15-10-2023	
	Languages	Ukrainian, English and other official languages of the WMO	
Target groups	☒ Teaching staff ☒ Students ☐ Trainees		

	☒ Administrative staff ☒ Technical staff ☐ Librarians ☒ Other
	Representatives of the national Ministry of Education and Science, Ministry of Energy and Environment Protection, coordination/attestation bodies, broader stakeholder circles representing world of profession and policy makers
Dissemination level	☐ Department / Faculty ☐ Local ☒ National ☐ Institution ☐ Regional ☒ International

Work package type and ref.nr	**MANAGEMENT**	**8**
Title	Project management	
Related assumptions and risks	**Assumptions**: 1) finance will be available to partners as planned, **Risks:** 1) lack of support of partner universities authorities; 2) lack of partners' commitment to cooperation and communication; 3) disrupted continuity of personnel at partner universities. **Ways of overcoming the risks:** 1) active personal involvement of the representatives of the PIs through the work in the Projects groups and/or local and national advisory boards will guarantee successful dissemination of the Project outputs/outcomes; 2) redistribution of financial facilities is possible in case of mis- and/or underperformance at each Project partner by the decision of the Project Coordinator authorized by the decision of the Project Steering Committee with mandatory notification of EACEA; 3) lineup of the local project groups shall be authorized through an order of the Rector at each PI which to determine personal composition of each task group at every PI.	
Description	The objective of WP8 is to ensure successful project implementation. General project management will be the task of the Project Coordinator (PC) – Prof. S. Zilitinkevich (P01). He will be supported by the Steering Committee (SC) consisting of WP coordinators and representatives of the Ministries, Hydrometeorological Centres and by coordinators of the PC parts of the project consortium. At PC institutions appointed contact persons will act as Institutional Project Coordinators (IPC) coordinating and monitoring project implementation at a given institution. Project Coordinator tasks will cover: daily financial administration and execution of contract, distribution of grant according to the decision of Steering Committee, monitoring purchase of equipment and tender procedures, taking preparatory measures for the General Assemblies and other project meetings, organization and monitoring of mobility programs, preparation and submission of necessary reports and contacts with the EACEA. The Steering Committee will regularly convene every 6 months for the Steering Committee Meetings (SCMs) and/or by means of videoconferencing at any other time in case of a need. Local Project Managers videoconferencing meetings (LPM meetings) will be conducted every two weeks for discussion and settling up all the current issues related to the project performance. A Google discussion group will be created in order to facilitate, together with the project web page, communication between the project partners at various levels. The ASANA platform will be used in order to coordinate actions of members of the general and local management of the project and will form the basis for the database of official reporting documents on performance of the project consortium for the EACEA. The Steering Committee will have both the advisory and approving roles in the general management of the project by evaluating project implementation, reviewing quality of the project outcomes, monitoring budget allocation, presenting guidelines for the future action and ensuring sustainability of project results. WP coordinators will monitor and evaluate work of particular members of WP ad-hoc working groups and progress in reference to the assumed milestones and performance	

	indicators. Institution Project Coordinators will coordinate the project activities at any particular partner institution, selection of staff members and for the mobilities, organization of workshops, preparation of interim, mid-tern and final reports, provision of institutional support from partner institutions and internal dissemination of the project results.		
Tasks	8.1 Preparing Partnership Agreement 8.2 Holding project meetings 8.3 Overall and local coordination 8.4 Ensuring purchase of the required equipment and software 8.5 Financial management		
Estimated Start Date (dd-mm-yyyy)	15-11-2020	**Estimated End Date (dd-mm-yyyy)**	14-11-2023
Lead Organisation	P01		
Participating Organisation	The whole consortium		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Staff costs: Total number of days – 479 Managers - 407 Teachers - 0 Technical Staff - 0 Administrative Staff – 72 Mobility 100900 EUR Subcontracting costs 4000 EUR In this project audit processes will be provided by the University of Helsinki. Audit process will be consist in the confidence and reassurance that the information and the way they conduct the project is administrative and suitably kosher.		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**8.1.**	
	Title	Preparing Partnership Agreement	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☒ Service/Product
	Description	The Partnership Agreement describes the project management structure — the Steering Committee, the leaders of work packages, the quality control team, the decision-making process, the procedures and rules for financial management.	
	Due date	14-12-2020	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		

Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**8.2.**	
	Title	Steering Committee; General Assemblies; Local Project Management Videoconferencing	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	Kick-off Meeting, 6 Progress Meetings (PM), 6 Steering Committee Meetings (SCM), and a number of coordination/monitoring visits by Coordinator to consortium institutions. Progress and Steering Committee Meetings are held together and take place every 6 months. PM03 and PM06 are Mid-term and Final Meetings, respectively. Local Project Manager videoconferencing meetings (LPM meetings) will be conducted every two weeks for discussion and settling up all the current issues related to the project performance.	
	Due date	14-11-2023	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**8.3.**	
	Title	Overall and local coordination	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	Performance of the project will be analysed based on the workplan monitoring, data from Local Project Managers and Work Package Leaders.	
	Due date	14-11-2023	
	Languages	Ukrainian and English	
Target groups	☒ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☒ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**8.4.**	
	Title	Ensuring purchase of the required equipment and software	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	All the consortium members in Partner Countries will receive equipment. Each recipient will carry out the procurement through tendering procedures according to national regulations. A possibility of a single tendering procedure (as similar equipment is planned for purchase for all the recipients) will be explored and viewed upon. UH will coordinate/monitor the whole process.	
	Due date	14-11-2023	
	Languages	Ukrainian and English	
Target groups	☐ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**8.5.**	
	Title	Financial management	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	Financial status of the project will be continuously monitored by the Project Manager, with assistance from Financial Services of the University of Helsinki.	
	Due date	14-11-2023	
	Languages	Ukrainian and English	
Target groups	☐ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

E.7 Consortium partners involved and human resources required to complete the work packages

Indicative input of consortium staff *- The total number of days per staff category should correspond with the information provided in the budget tables.*

Work Package Ref.nr	Partner nr	Partner acronym	Country	Number of staff days[1]					Exact Role and tasks of each person in the work package
				Category 1	Category 2	Category 3	Category 4	Total	
PREPARATION	1	UH	FI	10	10	0	0	20	Contributes to Information Collection and Analysis
	2	URV	ES	0	10	0	0	10	Contributes to Information Collection and Analysis
	3	EMU	EE	0	20	0	0	20	Contributes to Information Collection and Analysis
	4	OSENU	UA	10	20	0	20	50	Lead partner. Responsible for Information Collection and Analysis
	5	KNUCA	UA	0	10	0	10	20	Contributes to Information Collection and Analysis
	6	NUUEK	UA	0	10	0	10	20	Contributes to Information Collection and Analysis
	7	LPNU	UA	0	10	0	10	20	Contributes to Information Collection and Analysis
	8	BTNAU	UA	0	10	0	10	20	Contributes to Information Collection and Analysis
	9	ONMedU	UA	0	10	0	10	20	Contributes to Information Collection and Analysis
SUBTOTAL				20	110	0	70	200	
DEVELOPMENT	1	UH	FI	12	151	7	41	211	Leader of WP5. Responsible for Staff capacity building. Contributes to activities under WP2-4.
	2	URV	ES	7	122	7	26	162	Leader of WP3. Responsible for Course development. Contributes to activities under WP2, 4, 5. Hosts a Training session in the field of training of specialists in climate services
	3	EMU	EE	21	259	21	36	337	Leader of WP4. Responsible for ClimEd Piloting. Contributes to activities under WP2, 3, 5. Hosts a Training session in applying the competency-based approach, a Training session on application of various technologies of blended / online learning, and an

[1] *Please see Programme Guide, Part B for your action, Table A – Project Implementation (amounts in Euro per day) Programme Countries and Table B - Project Implementation (amounts in Euro per day) Partner Countries.*

									Advanced training event on the application of technologies for creating and developing massive open online courses
	4	OSENU	UA	46	246	79	42	413	Leader of WP2. Responsible for Creation of a scientific and educational platform. Contributes to activities under WP3-5. Hosts a Training session on adapting the framework of competencies
	5	KNUCA	UA	0	170	0	0	170	Contributes to activities under WP2-5.
	6	NUUEK	UA	0	170	0	0	170	Contributes to activities under WP2-5.
	7	LPNU	UA	0	170	0	0	170	Contributes to activities under WP2-5.
	8	BTNAU	UA	7	185	7	7	206	Contributes to activities under WP2-5.
	9	ONMedU	UA	0	170	0	0	170	Contributes to activities under WP2-5.
			SUBTOTAL	93	1643	121	152	2009	
QUALITY PLAN	1	UH	FI	0	35	0	0	35	Contributes to a strategic plan for quality improvement, QA of training events, quality assessment of the developed online and offline resources, QA for the ClimEd activity by virtuous circles and quality control of the project results.
	2	URV	ES	0	18	0	0	18	Contributes to a strategic plan for quality improvement, QA of training events, quality assessment of the developed online and offline resources, QA for the ClimEd activity by virtuous circles and quality control of the project results.
	3	EMU	EE	35	18	0	0	53	Lead partner. Responsible for a strategic plan for quality improvement, QA of training events, quality assessment of the developed online and offline resources, QA for the ClimEd activity by virtuous circles and quality control of the project results.
	4	OSENU	UA	0	35	35	35	105	Contributes to a strategic plan for quality improvement, QA of training events, quality assessment of the developed online and offline resources, QA for the ClimEd activity by virtuous circles and quality control of the project results.
	5	KNUCA	UA	0	18	0	0	18	Contributes to a strategic plan for quality improvement, QA of training events, quality assessment of the developed online and offline resources, QA for the ClimEd activity by virtuous circles

									and quality control of the project results.
	6	NUUEK	UA	0	18	0	0	18	Contributes to a strategic plan for quality improvement, QA of training events, quality assessment of the developed online and offline resources, QA for the ClimEd activity by virtuous circles and quality control of the project results.
	7	LPNU	UA	0	18	0	0	18	Contributes to a strategic plan for quality improvement, QA of training events, quality assessment of the developed online and offline resources, QA for the ClimEd activity by virtuous circles and quality control of the project results.
	8	BTNAU	UA	0	18	0	0	18	Contributes to a strategic plan for quality improvement, QA of training events, quality assessment of the developed online and offline resources, QA for the ClimEd activity by virtuous circles and quality control of the project results.
	9	ONMedU	UA	0	18	0	0	18	Contributes to a strategic plan for quality improvement, QA of training events, quality assessment of the developed online and offline resources, QA for the ClimEd activity by virtuous circles and quality control of the project results.
SUBTOTAL				35	196	35	35	301	
DISSEMINATION & EXPLOITATION	1	UH	FI	35	0	0	0	35	Contributes to ClimEd web site and promotion activities, DL Portal, dissemination and exploitation strategies and wider outreach activities
	2	URV	ES	0	18	0	0	18	Contributes to ClimEd web site and promotion activities, DL Portal, dissemination and exploitation strategies and wider outreach activities
	3	EMU	EE	0	35	0	0	35	Contributes to ClimEd web site and promotion activities, DL Portal, dissemination and exploitation strategies and wider outreach activities
	4	OSENU	UA	35	0	35	70	140	Lead partner. Responsible for ClimEd web site and promotion activities, DL Portal, dissemination and exploitation strategies and wider outreach activities
	5	KNUCA	UA	0	18	0	18	36	Contributes to ClimEd web site and promotion activities, DL Portal, dissemination and exploitation strategies and wider outreach activities

	6	NUUEK	UA	0	18	0	18	36	Contributes to ClimEd web site and promotion activities, DL Portal, dissemination and exploitation strategies and wider outreach activities
	7	LPNU	UA	0	18	0	18	36	Contributes to ClimEd web site and promotion activities, DL Portal, dissemination and exploitation strategies and wider outreach activities
	8	BTNAU	UA	0	18	0	18	36	Contributes to ClimEd web site and promotion activities, DL Portal, dissemination and exploitation strategies and wider outreach activities
	9	ONMedU	UA	0	18	0	18	36	Contributes to ClimEd web site and promotion activities, DL Portal, dissemination and exploitation strategies and wider outreach activities
			SUBTOTAL	70	143	35	160	408	
MANAGEMENT	1	UH	FI	83	0	0	0	83	Lead partner. Responsible for day-to-day management, organisation of timely inputs from partners, finalisation of the financial report, uninterrupted communication flow. Appoints the Coordinator and the Project Manager. Prepares all the reporting materials required by contractual obligations. Participates in the the meetings of the Assembly of Partners. Hosts a Kick-off meeting and a Final meeting
	2	URV	ES	36	0	0	0	36	Participates in the meetings of the Assembly of Partners. Responsible for its own financial management.
	3	EMU	EE	36	0	0	0	36	Participates in the meetings of the Assembly of Partners. Responsible for its own financial management.
	4	OSENU	UA	72	0	0	72	144	Participates in the meetings of the Assembly of Partners. Responsible for its own financial management. Hosts PM2 combined with SCM2
	5	KNUCA	UA	36	0	0	0	36	Participates in the meetings of the Assembly of Partners. Responsible for its own financial management. Hosts PM3 combined with SCM3
	6	NUUEK	UA	36	0	0	0	36	Participates in the meetings of the Assembly of Partners. Responsible for its own financial management. Hosts PM4 combined with SCM4
	7	LPNU	UA	36	0	0	0	36	Participates in the meetings of the Assembly of Partners. Responsible for its own financial

									management. Hosts PM5 combined with SCM5
	8	BTNAU	UA	36	0	0	0	36	Participates in the meetings of the Assembly of Partners. Responsible for its own financial management.
	9	ONMedU	UA	36	0	0	0	36	Participates in the meetings of the Assembly of Partners. Responsible for its own financial management.
SUBTOTAL				407	0	0	72	479	
TOTAL				625	2092	156	489	3397	

Please insert rows as necessary

PART F – Quality of the Project Team and Cooperation Arrangements

F.1 Background of partnership and the proposal preparation

Please provide shortly the history of cooperation between partners (if any). How the idea of the project was developed and which/ who among partners contributed to the proposal development. (limit 3.000 characters)

Cooperation between some of the ClimEd partners was formed quite a long time ago.
The P1 (FI) and P4 (UA) are collaborating under the project of 561975-EPP-1-2015-1-FI-EPPKA2-CBHE-JP (ECOIMPACT: Adaptive learning environment for competence in economic and societal impacts of local weather, air quality and climate), dedicated to creation of three levels of courses (BSc, MSc & PhD) in Meteorological Economics, with application of the IoT to obtain spatial information on the environment and its subsequent interpretation in diagnostic and prognostic calculations.

P9 (UA) was involved by the partners at the implementation stage of the ECOIMPACT.
In addition, P4 has experience of successful cooperation with P1 under the action TEMPUS JEP 26005-2005 (COMBAT-METEO: Development of competency-based two-level curricula in Meteorology), and 159352-TEMPUS-2009-FI-JPHES (QUALIMET: Development of Qualification Framework in Meteorology), which resulted in the development of centres of excellence in the field of meteorology and climatology, with P4 being one of the nodes of this network.
And furthermore, P4 successfully cooperated with P6 (UA) under the project 511390-TEMPUS-1-2010-1-SK-TEMPUS-JPCR (Environmental Governance for Environmental Curricula: EnGo), the main aim of which was to increase competitiveness of environmental professional and research education in partner – countries' universities using principles and methods of the Bologna Process. And P4 also worked closely with P8 (UA) in the project of 544524-TEMPUS-1-2013-1-PL-TEMPUS-SMHES (QANTUS: Qualifications Framework in Environmental Science at Ukrainian Universities), which was focused on enhancement of quality and relevance of higher education in Ukraine and increasing convergence with EU developments through elaboration of qualifications frameworks.
Since 2017, P4 and P3 (EE) have been implementing the project of 586471-EPP-1-2017-1-EE-EPPKA2-CBHE-JP (INTENSE: Integrated Doctoral Program for Environmental Policy, Management and Technology), aimed at building capacity for academic excellence in doctoral training in environmental studies in PCs.
Concept of the proposal was suggested as a consequence of active discussions during the 13th WMO Education and Training Symposium in Bridgetown, Barbados, in 2017, by representatives of three leading HEIs in the hydrometeorological education - prof. S. Zilitinkevich, University of Helsinki, prof. E. Aguilar, WMO Commission for Climatology, University Rovira i Virgili, and prof. S. Stepanenko, Odessa State Environmental University.
Thereafter, the main contribution to the Proposal development was made by P4, P6, P8 and P9 due to their close collaboration and a deep understanding of the problems that the National Hydrometeorological Services, climate-dependent economic sectors and other target groups are facing because of climate change. P3 (EE) had a great influence on the development of work package due to their rich experience in DL and the creation of MOOCs. Since the project concept involves close interaction with climate-dependent industries, P5 and P7, as the leading UA universities in these areas, were also engaged in the proposal development to align the aim and objectives of the project with the interests of construction and energy sectors.

If relevant, please explain how and to which extent the project benefits from the experience and participation of non–academic partners. (limit 3.000 characters)

Under the framework of the project, it is expected that the Ministry of Education and Science of Ukraine and the Ministry of Energy and Environment Protection of Ukraine will participate in organizational

activities, provide an expert assessment (a peer review) of the project outcomes and, upon the end of the project, assist in development of a multi-level system of education and training in climate change and related sciences in line with the national priorities.
The role of the Ministry of Education and Science will be in the control over implementation of the project goals and objectives in the education system of Ukraine during the project and post-project periods, as well as the monitoring of compliance of the project results with educational priorities.
The Ministry of Energy and Environment Protection plays a key role in implementation of government programmes on biodiversity conservation, adaptation to climate change and mitigation of its impact on economic sectors and various territorial communities, sustainable water resources management and sustainable energy development. Therefore, in the project consortium, the Ministry will monitor performance of the project stages and provide an expert assessment on how the final project outcomes correspond to the main goals and objectives of government programmes and the Concept of State Climate Change Policy for the period until 2030, as well as facilitate their development and implementation.The Ministry as one of the main stakeholder of the project will make recommendations on consideration of the needs of end user of climate information from energy sector and water management in educational programmes and provide an expert assessment of how much the project outcomes will promote the sustainable development of these economic sectors.

Please explain the role and the participation of the Programme Country partners and their support in the development of the different activities (e.g. in the development of the curricula) and (limit 3.000 characters)

The University of Helsinki is a grant coordinator of the project and, accordingly, will have an advisory role, together with the Steering Committee, in the overall project management by making assessment of project performance, reviewing the quality of project results, monitoring the distribution of budget funds, providing guidelines for future actions and ensuring sustainability of the project results. As an institutional project coordinator, UH will coordinate the project activities in any particular partner institution, selection of staff for mobility, organization of workshops, drafting of specific reports, provision of institutional support from partner institutions and internal dissemination of the project results. Introduction of a competency-based approach to creation of a multi-level system for training specialists in the field of climate services, which is widely practiced in the continuing education at P1 for a long time, will also be an important element in the experience exchange.
Having regard to the vast experience of Estonian Life Science University (EMU), Tartu, in the field of continuing education (in 2017, almost 1,500 courses were organized, where approximately 48,000 course-takers improved their skills and acquired additional knowledge, with training provided at the Open University (OU), which operates in the field of lifelong learning), EMU will have a leading role in organization of training sessions for teacher training by means of modern innovative technologies, aimed at further introduction of the experience obtained for arrangement of courses on an educational platform for climate services.
Within the project, partners from Estonian Life Science University will monitor the quality of learning the courses on climate services being created. Depending on the structure of priorities for each of the target groups of learners, up-to-date innovative assessment methods, in particular, the Kirkpatrick model, the Phillips model and the CIRO scheme in the medium and long term, will be applied.
The main project objective is to create a multi-level system for training of climate service experts. The Centre for Climate Change at Rovira i Virgili University (URV) is the leading European centre for training professionals in this field, and its head is one of the developers of the new WMO standard for training of climatologists. Thus, URV will play a leading part in development of courses in climatology and the climate change impact on economic sectors under the framework of competencies for climate services.

F.2 Cooperation arrangements, management and communication

Please define the organisation of the implementation of the project and the division of tasks between the partners. Please explain the allocation of resources for each activity. Explain also how the tasks are distributed amongst the partners and how project "ownership" is ensured (limit 3.000 characters).

The project work is organised within 8WPs. A lead coordinator for each of them is assigned to assume overall responsibility for its implementation.
Subject to their capacity and specific interests, partner institutions (PIs) are given customised levels of responsibility and tasks to perform, with project resources distributed accordingly. All the academic PIs will participate in organisational and curriculum development; P5-9 provide links to the Sectoral Entities and contribute to the development of sustainable mechanisms for academia- climate-dependent industry interactions.
Role of P10 will be in peer review of outcomes/outputs of the Project. Role of P11 will be to define how needs for and expectations of various categories of end-users of climate information will be met through the Project outcomes/outputs.
Among the PIs only P4 has a unique experience in development of hydrometeorological edication in UA and long-standing history of copperation with the WMO, training specialists for WMO for more than 50 years and resulting in being the only University, on the base of which multilevel system of climate education may be realized with involving other partner universities and stakeholders to support of high quality and practical orientation of the education.
Therefore, the largest budget is allocated to P4 playing a crucial role in development of education and training in climate services, climate change adaptation and mitigation and being responsible for implementation of WP1,WP2&WP7.
The other PIs will be involved in the development of the educational system as repositories of valuable practical knowledge for building a training system focused on the needs of climate-dependent sectors of the economy, as well as for learning the necessary experience therefore their budgets are considerably smaller.
In the EU the largest budget is allocated to P1 handling most of project-wide management tasks and actively contributing to all the project activities; the second largest budget goes to P3 overseeing the elaboration of the courses, being involved in the main training activities and mostly contributing to WP6, and the third one goes to P2, engaged in the implementation of developed courses/modules.
In order to ensure sustainable implementation of the project at all phases and an important and valuable insight into the information that exists within the project, external experts in quality assurance, curricula deliverables and financial audit will be invited. Subcontracting costs to pay their services are provided for in the budget.
The overall responsibility for the project implementation and mediation of conflicts rests with the Coordinator (P1). The implementation is helped by the Steering Committee (SC) consisting of WP leaders and representatives from each country involved in the project (every six month).
In the case of a lack of partners' commitment to cooperation and communication which results in mis- and/or underperformance, the Coordinator can mandate redistribution of financial facilities is which is authorized by the decision of the Project SC with mandatory notification of EACEA.

Please explain the overall project and partnership management making specific reference to the management plan and how decisions will be taken. Please describe how permanent and effective communication and reporting will be ensured as well as the measures put in place for conflict resolution (limit 2.000 characters).

All the cooperation and communication arrangements will be settled in the Consortium Agreement concluded at the kick-off meeting. The project coordinator, University of Helsinki (UH), is responsible for all matters regarding administration, financial management, all content-related observances, as well as communicating these matters externally, to representatives of the European Commission, and internally, between the consortium parties.
At HEIs contact persons will be appointed and act as Institutional Project Coordinators (IPCs) coordinating and monitoring project implementation at a given institution. IPC tasks will cover: daily financial administration and execution of contract, distribution of grant according to the decision of Steering Committee (SC), monitoring purchase of equipment and tender procedures, taking preparatory measures for the project meetings, organization and monitoring of mobility programs, preparation and

submission of reports and contacts with EACEA. The SC will regularly convene every 6 months for the Steering Committee Meetings (SCMs) and/or by means of videoconferencing at any other time in case of a need. Local Project Managers videoconferencing meetings (LPM meetings) will be conducted every two weeks for discussion and settling up all the current issues related to the project performance. The SC will have both the advisory and approving roles in the general management of the project by evaluating project implementation, reviewing quality of the project outcomes, monitoring budget allocation, presenting guidelines for the future action and ensuring sustainability of project results. WP coordinators will monitor and evaluate work of particular members of WP ad-hoc working groups and progress in reference to the assumed milestones and performance indicators. IPCs will coordinate the project activities at any particular partner institution, selection of staff members for the mobilities, organization of workshops, preparation of interim, mid-term and final reports, provision of institutional support from PIs and internal dissemination of the project results.

F.3 Organisations and activities

This part must be completed separately by each organisation participating in the project (applicant and partners with its affiliated entities (if any)).

Partner number		**P1**
Organisation name & acronym	University of Helsinki (UH)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

The University of Helsinki is the oldest and largest institution of academic education in Finland, an international scientific community of 40,000 students and researchers. In international university rankings, UH typically ranks among the top 100. The University seeks solutions for global challenges and creates new ways of thinking for the best of humanity. The university is divided into 11 faculties, including Faculty of Science, Faculty of Biological and Environmental Sciences, and Faculty of Agriculture and Forestry. Furthermore, the University accommodates several independent research-oriented institutes, multidisciplinary research networks and campus units (e.g. Environmental Change Research Unit), as well as units attending to duties of national authority.
In the project UH is represented by the Institute for Atmospheric and Earth System Research (INAR) - a joint unit under the Faculty of Science and Faculty of Agriculture and Forestry with ca. 220 research staff based in Helsinki. INAR aims to strengthen the internationally leading, integrated multidisciplinary research and education environment for atmospheric and Earth system science and to feed in scientific results to national and international environment and climate policy. It performs multiscale research from molecular to global scale and focuses on climate change, air quality, biogeochemical cycles and ecosystem processes. The work is based on a network of field stations producing extensive long-term data on atmospheric properties and ecological mass fluxes in different types of environments and regions, including Arctic, boreal and tropical ecosystems, and on focused experiments and modeling aimed at understanding the observed patterns. Every year INAR organizes several international intensive courses, tailored to meet student's special needs, extensively using its field stations and e-learning facilities. INAR coordinates the national Centre of Excellence in Atmospheric Science - From Molecular and Biological processes to the Global Climate (https://www.atm.helsinki.fi/FCoE/) and hosts the Headquarters of Pan-Eurasian Experiment (PEEX) – multidisciplinary climate change, air quality, environment and research infrastructure program (https://www.atm.helsinki.fi/peex/).

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	N/A
Number of students	N/A
Number of Bachelor degrees offered	N/A
Number of Master degrees offered	N/A
Number of PhD degrees offered	N/A
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	N/A

F.3.2 – Role of your organisation in the project

Please describe also the role of your organisation in the project (limit 1000 characters).

UH will act as the coordinator of the project, responsible for the project implementation, financial management, and ensuring that the funding is spent according to the rules defined in the agreement. As a coordinator, UH will be responsible for organizing management meetings, reporting to the European Commission, transferring funds to partners, and will supervise efficient collaboration and communication between the partners. INAR will take part in organising and teaching multidisciplinary courses in UA. The academic staff of UH will share experience on teaching courses on climate change, focusing on human activities leading to climate change, terrestrial ecosystem meteorology, greenhouse gas budgets, and carbon sinks.
UH will also lead work package on staff capacity building.
In particular, P1 will host a Kick-off meeting, Training sessions on climate data processing software, and a Final meeting.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*

Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

For new courses

What new courses will the project implement in your HEI?	N/A

For each course please fill the following nested table:

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
Estimated starting date of the new programme	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	N/A
For each course please fill the following nested table:	

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
% of the modernised subjects compared to total subjects included in the course	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

Provide information on (if applicable)

List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A
Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A
Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	N/A
How will the impact of these results be measured in your HEI?	N/A
What financial means and human and other resources will be provided to sustain these results after the project ends?	N/A

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Sergej Zilitinkevich	Professor, Director of Research, Institute for Atmospheric and Earth System Research (INAR) at UH. Expert in environmental and climate physics; 8 books, 230 peer-reviewed articles; delivered a dozen short courses at international schools, supervised 25 PhD candidates (4 became full professors), developed 7 different courses in Russia, Germany, Sweden and Finland; coordinated/held numerous international projects including Marie Curie Chair (2004-07), ERC-IDEAS Advanced Grant (2009-13), TEMPUS 26005 (2007-10), TEMPUS 159352 (2010-13); Erasmus+ 561975 (2015-19); per year gives 4 invited lectures at international conferences and arranges 3 conferences/schools; holds Vilhelm Bjerknes Medal 2000 (EGS), Alfred Wegener Medal 2015 (EGU), International Meteorological Organization Prize 2019 (WMO); member of: Academia Europaea, Finnish Academy of Science and Letters, editorial boards of several journals. A few relevant publications: 1. Zilitinkevich, S.S., Mammarella, I., Baklanov, A.A., and Joffre, S.M., 2008: The effect of stratification on the aerodynamic roughness length and displacement height. *Boundary-Layer Meteorol.* 129, 179-190. 2. Esau, I., and Zilitinkevich, S., 2010: On the role of the planetary boundary layer depth in climate system. Adv. Sci. Res. 4, 63-69. 3. Zilitinkevich S.S., 2012: The Height of the Atmospheric Planetary Boundary layer: State of the Art and New Development – Chapter 13 in "*National Security and Human Health Implications of Climate Change*", edited by H.J.S. Fernando, Z. Klaić, J.L. McKulley, NATO Science for Peace and Security Series – C: Environmental Security, ISBN 978-94-007-2429-7, Springer, 147-161. 4. Zilitinkevich, S.S., Elperin, T., Kleeorin, N., Rogachevskii, I., Esau, I.N., 2013: A hierarchy of energy- and flux-budget (EFB) turbulence closure models for stably stratified geophysical flows. *Boundary-Layer Meteorol.* 146, 341-373 (DOI: 10.1007/s10546-012-9768-8). 5. Zilitinkevich S., Kulmala M., Esau I., Baklanov A., 2015: Megacities – refining models to personal environment. *WMO Bulletin* 64 (1), 20-22. 6. Davy R., Esau I., Outten S., Chernokulsky A., Zilitinkevich S., 2016: Diurnal asymmetry to the observed global warming. *International Journal of Climatology*, DOI: 10.1002/joc.4688. 7. Lappalainen H.K., Kulmala M., Kujansuu J., Petäjä T., Mahura A., de Leeuw G., Zilitinkevich S., Juustila M., Kerminen V.-M., Bornstein B., Jiahua Z., Yong X., Yubao Q., Dong L., Jie L. and Huadong G., 2018: The Silk Road agenda of the Pan-Eurasian Experiment (PEEX) Program, Big Earth Data, 2, 1, 8-35, DOI 10.1080/20964471.2018.1437704 8. Zilitinkevich S., Druzhinin O., Glazunov A., Kadantsev E., Mortikov E., Repina I.,

	and Troitskaya Yu., 2019. Dissipation rate of turbulent kinetic energy in stably stratified sheared flows. *Atmos. Chem. Phys*. 1**9**, 1-7.
Markku Kulmala	Academy Professor, Academician, Director of the Institute for Atmospheric and Earth System Research (INAR). He is a world leader in atmospheric aerosol science and one of the founders of "terrestrial ecosystem meteorology". Leads the Centre of Excellence in Atmospheric Science. Principal investigator of scientific projects: 38 EU projects (5 of which as a coordinator); 5 Nordic projects (all of them as coordinator), 47 National projects (all of them as coordinator). Published over 950 original research papers, 17 of which in Nature, 15 in Science and 7 in Physical Review Letters; h-index 110. According to ISI Web of Knowledge, Kulmala is 1st in the Citation Rankings in Geosciences (since 1.5.2011). He is a Referee for 31 Scientific Journals, including Nature and Science. Supervised Doctoral students: 68 (17 are nowadays professors or tenure positions); Licentiate Thesis: 8; M. Sc. Thesis: 51; B.Sc. Thesis 25; Present doctoral students: 16. 1. Kulmala M, 2003, How Particles Nucleate and Grow. Science 302, 1000-1001. 2. Kulmala M., T. Suni, K.E.J. Lehtinen, M. Dal Maso, M. Boy, A. Reissell, U. Rannik, P. Aalto, P. Keronen, H. Hakola, J. B¨ack, T. Hoffmann, T. Vesala, P. Hari, 2004, A new feedback mechanism linking forests, aerosols, and climate, Atmos. Chem. Phys. 4, 557-562 3. Kulmala M., L. Laakso, K.E.J. Lehtinen, I. Riipinen, M. Dal Maso, T. Anttila, V.-M. Kerminen, U. H¨orrak, M. Vana and H. Tammet, 2004, Initial steps of aerosol growth, Atmos. Chem. Phys. 4 2553-2560 4. Kulmala, M., Lehtinen, K.E.J. and Laaksonen, A., 2006, Cluster activation theory as an explanation of the linear dependence between formation rate of 3 nm particles and sulphuric acid concentration. Atmos. Chem. Phys., 6, 787-793. 5. Kulmala, M., Riipinen, I., Sipil¨a, M., Manninen, H., Pet¨aj¨a, T., Junninen, H., Dal Maso, M., Mordas, G., Mirme, A., Vana, M., Hirsikko, A., Laakso, L., Harrison, R M., Hanson, I., Leung, C., Palmer, R., Lehtinen, K. E. J., and Kerminen V.-M., 2007, Towards direct measurement of atmospheric nucleation. Science, 318, 89-92, 10.1126/science.1144124 6. Kulmala M et al.: General overview: European Integrated project on Aerosol Cloud Climate and Air Quality interactions (EUCAARI) - integrating aerosol research from nano to global scales, Atmospheric Chemistry and Physics, 11, 13061-13143, 2011 7. Kulmala M. and Pet¨aj¨a T., Soil Nitrites Influence Atmospheric Chemistry. Science, 333, 1586-1587, 2011 8. Kulmala M, Pet¨aj¨a T, Nieminen T, Sipila M, Manninen HE, Lehtipalo K, Dal Maso M, Aalto PP, Junninen H, Paasonen P, Riipinen I, Lehtinen KEJ, Laaksonen A, Kerminen VM: Measurement of the nucleation of atmospheric aerosol particles, NATURE PROTOCOLS, 7, 1651-1667, 2012 9. Kulmala M et al.: Direct observations of atmospheric aerosol nucleation. Science, 339, 943 DOI: 10.1126/science.1227385 (2013) 10. Kulmala M: Build a global Earth observatory, Nature 553, 21-23 (2018)
Katja Lauri	PhD, Researh Director at the University of Helsinki, Director of the Master's Programme in Atmospheric Sciences. President of the Finnish Association for Aerosol Research, Permanent member of the Teachers' Academy (top 1% of teachers at UH), Member of the Finnish Physical Society and the European Physical Society. Her academic interests are in physics, chemistry, meteorology, environmental sciences and pedagogy. She has 22 articles in international peer-reviewed journals, more than 100 conference papers and three edited books. She has taken part in several networking projects (Nordplus Networks "Atmosphere-Biosphere Studies", "Nord+physics", and "Climate change teaching in Greenland", Nordic-Russian University Network for Successful Cooperation in Higher Environmental Education, etc).
Irina Bashmakova	PhD, Researcher/Project Manager at the University of Helsinki. Areas of interest in assessment of ecological state of the environment, water-quality indices for operational and modelling applications. Acted as manager for TEMPUS 26005 "Competency-based 2-level curricula in meteorology" (2007-10), TEMPUS 159352 "Qualimet" (2010-13), Erasmus+ (2015-2019); as researcher in FP7 EU MEGAPOLI (No. 212520, 2008-11) on urban environment, as PI responsible for water quality issues in Italian project "Environmental management in coastal industrial area" (ENEA, Rome, 2009-11). Currently involved in coordination of Pan-Eurasian Experiment (PEEX) Programme. Member of International Association of Danube Countries; published 53 reviewed papers, 3 books and 4 conference presentations.
Hanna Lappalainen	PhD, Pan-Eurasian Experiment (PEEX) Executive Officer, works currently at PEEX Headquarters, at the University of Helsinki (INAR); has a long-term experience of

	coordinating large-scale research projects and funding applications and has been working as a research coordinator and a science officer in the projects such as "European Integrated Project on Aerosol Could Climate and Air Quality Interaction" EU-FP7-EUCAARI (2007-2010) and "Finnish Center of Excellence in Physics, Chemistry, Biology and Meteorology of Atmospheric Composition and Climate Change" (2012-2013); has received NASA Goddar. Team Award EOS-AURA satellite OMI-Team in 2005; obtained her PhD. from the Department of Biological and Environmental Sciences, University of Helsinki, Finland in 2011; has been engaged in analysis of the atmospheric concentration of the Biogenic Volatile Organic Compounds (BVOCs) and plant phenological time series and modelling. 1. Lappalainen H. et al., 2016: Pan-Eurasian Experiment (PEEX): Towards holistic understanding of the feedbacks and interactions in the land–atmosphere–ocean–society continuum in the Northern Eurasian region. Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-186. 2. Lappalainen H.K. et al, 2018: Pan-Eurasian Experiment (PEEX) Program: An overview of the first 5 years in operation and future prospects. *Geography, Environment and Sustainability*, 11(1):6-19, DOI 10.24057/2071-9388-2018-11-1-6-19

Partner number		**P2**
Organisation name & acronym	Universitat Rovira i Virgili (URV)	

F.3.1 - Aims and activities of the organisation

Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

URV is a public university with 12 Faculties and Schools, 23 Departments, 1020 FTE teaching and research staff and 12.000 undergraduate students, 1.300 masters students and 1.100 PhDs. The URV is well positioned internationally in terms of research, development and innovation. Thanks to the competitiveness of its staff it has obtained good results in both the quantity and the quality of its publications and it has been classified for the best 250 young universities in the world (Times Higher Education, 78th place, 2018), as well as among the most prestigious 500 universities globally (Times Higher Education World University Rankings, 2018). At Spanish level, URV is 21st in articles indexed on the Web of Science (1031 papers), 11th in citations per article (an average of 15.3 citations), 4th in publications by permanent teaching staff (1.8 papers per year on average) and the 7th with Highly Cited Papers per each 100 permanent teaching staff (an average of 20.7 citations) (2017). In the last 4 years (2015-2018), URV has been granted 54 EU projects, from which 19 are coordinated. That has meant over 15 million euros in competitive funding. Key data 2017: 234 Doctoral Theses Defended (course 2016-17) in 24 Doctoral Programs, 1313 Articles published (WOS-SCOPUS), 11 patents applications, 18,1 M€ funding obtained for R&D&I (competitive and non-competitive funds) The URV regularly launches internal R&D funding programs for its researchers, such us doctoral and post-doc fellowships, staff mobility, emerging research, R&D collaboration projects, dissemination activities, IPR exploitation and spin-off creation. The Center for Climate Change, C3 (URV), is involved in Climate Data Rescue (DARE); Instrumental climate data reconstruction; Quality control and homogenization; Climate variability analysis and climate change studies; Paleoclimate data calibration; climate change data products and services; Education and training and Curriculum Development for Climate Services.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	N/A
Number of students	N/A
Number of Bachelor degrees offered	N/A
Number of Master degrees offered	N/A
Number of PhD degrees offered	N/A
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	N/A

F.3.2 – Role of your organisation in the project

Please describe also the role of your organisation in the project (limit 1000 characters).

The involvement of C3/URV members in this proposal will be centered in contributing to the design, development and implementation of a higher education curriculum in the Climate Services area. C3/URV will exchange with the academics in the GUAM countries to ensure the capacity development of human resources to ensure the deployment of a curriculum adapted to the competencies for Climate Services from WMO. Also, C3/URV will help in the design, development and implementation of activities targeting stakeholders, policy makers and users. The academic staff will be involved in training sessions on climate data processing software.
P4 will host Training events on the Climate Services.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*

Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

For new courses

What new courses will the project implement in your HEI?	N/A

For each course please fill the following nested table:

Title	**N/A**
Level of study	**N/A**
List of subjects and credits (ECTS or comparable credit system) for each of them	**N/A**
Estimated date of accreditation and accreditation body	**N/A**
Estimated starting date of the new programme	**N/A**
Number of students to be accepted in the first year/ second year	**N/A**
Number of teaching staff to be trained	**N/A**
Internship /placements (if applicable)	**N/A**
List of equipment to be purchased for this course? (if applicable)	**N/A**

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	**N/A**
For each course please fill the following nested table:	

Title	**N/A**
Level of study	**N/A**
List of subjects and credits (ECTS or comparable credit system) for each of them	**N/A**
Estimated date of accreditation and accreditation body	**N/A**
% of the modernised subjects compared to total subjects included in the course	**N/A**
Number of students to be accepted in the first year/ second year	**N/A**
Number of teaching staff to be trained	**N/A**
Internship /placements (if applicable)	**N/A**
List of equipment to be purchased for this course? (if applicable)	**N/A**

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

Provide information on (if applicable)

List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A
Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A
Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	N/A
How will the impact of these results be measured in your HEI?	N/A
What financial means and human and other resources will be provided to sustain these results after the project ends?	N/A

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Enric Aguilar Anfrons	Member of the WMO Executive Council Panel of Experts on Education and Training and of the WMO Commission for Climatology Expert Team on Human Resources Development. Involved in the description of Climate Services Competencies and in the preparation of the future Basic Instruction Package for Climate Services. Experience in organizing and delivering Education and Training Activities for WMO since 2000. Member of the joint commission Agencia Estatal de Meteorología – URV for education and training for Climate Services. Professor (Spanish Scale: "Profesor Titular") at URV's Geography Department, climatology area. Center for Climate Change, C3, Senior Scientist Publications from Google Scholar: https://scholar.google.es/citations?hl=es&user=aGtw4_cAAAAJ&view_op=list_works&sortby=pubdate
Manola Brunet India	World Meteorological Organization Commission for Climatology, President. Responsible for the climate in the organization. Experience in organizing and delivering Education and Training Activities for WMO since 2000. Full Professor (Spanish Scale: "Catedrático") at URV's Geography Department, climatology area. Center for Climate Change, C3, Director. Publications from Google Scholar: https://scholar.google.es/citations?hl=es&user=bEtBLLoAAAAJ&view_op=list_works&sortby=pubdate
Alba Gilabert Gallart	Post-doctoral fellow at Center for Climate Change, experience in delivering training for WMO since 2014
Joan Ramón Coll	Post-doctoral fellow at Center for Climate Change, experience in delivering training for WMO since 2012

Partner number		**P3**
Organisation name & acronym	Estonian Life Science University (EMU)	

F.3.1 - Aims and activities of the organisation

Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Estonian University of Life Sciences (EMU) is a public university, established in 1951. It is the centre of research and development in the fields of agriculture, forestry, animal science, veterinary science, rural life and economy, food science and environmentally-friendly technologies in Estonia. According to QS World University Rankings by Subject (2017), EMU is one of top 100 universities in the world in the field of agriculture and forestry, ranked 51 to 100. EMU also belongs to the top 1% most cited research facilities in the world in the field of plant and animal science as well as environment and ecology. In its development plan for 2025 EMÜ has defined its goal to become internationally recognized university in the field of bio-economy. Internationally competitive research and development work, which forms a basis for teaching at all levels of higher education, as well as activities promoting the development of the society in their areas of responsibility are the striving force of the University.

EMU is a leading institution for research, teaching and training in the forestry, biodiversity conservation, climate adaption, agricultural and environmental sciences, bio-economy in the Baltic Region. The Institute of Agricultural and Environmental Sciences (IAES) is an interdisciplinary research and educational centres for among others sustainable forestry, novel business models in forestry and agriculture, sustainable growth of rural areas, management of landscapes and natural resources, biodiversity, environmental economics, mapping and evaluation ecosystem services, nature based solutions.

In Spring semester 2018/2019 there are around 2890 students enrolled at the university, from which 8,7% are international degree students. Additionally, EMÜ receives about 140 exchange students each year. EMÜ employs 938 staff members (incl 413 academic staff members).

EMU's expertise is widely used by European and international organisations, in collaborative projects. EMU was involved in several projects related to the present proposal AlterNet, EUMON, BIOPLATFORM, GEM- EBONE, ESMERALDA, BlueHealth, MANTEL etc and several ERASMUS+ Projects (IntASE, EduSapMan, Quals, Sunraise, INTENSE, FACES).

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	N/A
Number of students	N/A
Number of Bachelor degrees offered	N/A
Number of Master degrees offered	N/A
Number of PhD degrees offered	N/A
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	N/A

F.3.2 – Role of your organisation in the project

Please describe also the role of your organisation in the project (limit 1000 characters).

EMU will lead the WP 6 and 7, being responsible for persistent control on progress in the project performance and the quality of the tasks fulfilled, as well as for overseeing the elaboration of the courses. The academic staff being involved in the main training activities, will share experience on teaching courses on climate change in Taragona, Spain, and also contribute to the training events on climate data processing software teaching in Helsinki, Finland. It will host three training events on applying the use and introduction of a competence-based approach to the learning process, distance learning technologies and best practices on massive open online course creation.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*

Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

For new courses

What new courses will the project implement in your HEI?	N/A

For each course please fill the following nested table:

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
Estimated starting date of the new programme	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	N/A

For each course please fill the following nested table:

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
% of the modernised subjects compared to total subjects included in the course	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

Provide information on (if applicable)

List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A
Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A
Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution (limit 2000 characters)

N/A

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	N/A
How will the impact of these results be measured in your HEI?	N/A
What financial means and human and other resources will be provided to sustain these results after the project ends?	N/A

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Prof. Dr Timo Kikas	He is a chair professor of Biosystems Engineering chair in the Institute of Technology of Estonian University of Life Sciences. He gained his doctoral degree in Georgia Institute of Technology, USA and has worked as a scientist in USA, Japan, Finland and Estonia. He has also been a director of Türi College of Tartu University and Study Program manager of Environmental Engineering curriculum at University of Tartu. Thus, has also administrative experience in the higher educational system. Currently he is a leader of two international research projects in the Inno-Indigo

	program – INDO-NORDEN and B-LIQ, Editor in Chief of Agronomy Research journal, member of the Board of Institute of Technology and the Board of Estonian University of Life Sciences. Recent publications: 1. Rocha-Meneses, Lisandra; Ivanova, Anastasia; Atouguia, Guilherme; Ávila, Isaac; Raud, Merlin; Orupõld, Kaja; Kikas, Timo (2019). The effect of flue gas explosive decompression pretreatment on methane recovery from bioethanol production waste. Industrial Crops And Products, 127, 66−72.10.1016/j.indcrop.2018.10.057. 2. Raud, Merlin; Rooni, Vahur; Kikas, Timo (2018). The Efficiency of Nitrogen and Flue Gas as Operating Gases in Explosive Decompression Pretreatment. Energies, 11 (2074).10.3390/en11082074. 3. • Rooni, Vahur; Raud, Merlin; Kikas, Timo (2017). The Freezing Pre-Treatment of Lignocellulosic Material: A Cheap Alternative for Nordic Countries. Energy, 139, 1−7.10.1016/j.energy.2017.07.146. 4. • Pitman, Kätlin; Raud, Merlin; Scotti, Gianmario; Jokinen, Ville P.; Franssila, Sami; Nerut, Jaak; Lust, Enn; Kikas, Timo (2017). Electrochemical Characterization of the Microfabricated Electrochemical Sensor-Array system. Electroanalysis, 29, 249−258.10.1002/ elan.201600559. 5. • Raud, Merlin; Mitt, Marion; Oja, Tõnu; Olt, Jüri; Orupõld, Kaja; Kikas, Timo (2017). Utilization potential of urban greening waste: Tartu case-study. Urban Forestry and Urban Greening, 21, 96−101.10.1016/ j.ufug.2016.11.014. 6. • Raud, Merlin; Olt, Jüri; Kikas, Timo (2016). N2 explosive decompression pretreatment of biomass for lignocellulosic ethanol production. Biomass Bioenergy, 90, 1−6.10.1016/j.biombioe.2016.03.034.
	Senior researcher at Estonian University of Life Sciences (Chair of Environmental Protection and Landscape Management at the Institute of Agricultural and Environmental Sciences), visiting lecturer at Central European University in Budapest (Department of Environmental Sciences and Policy) and several universities in Belarus, Russia and Ukraine, and the director of Erda Research Technology Education (the Netherlands). Dr. Shkaruba has extensive research, teaching and capacity building experience in the subject area, including organisation of series of summer schools at Central European University on climate change vulnerability and adaptation (2009-2013), teaching courses to MSc students on adaptation of social-ecological systems and on carbon sequestration (since 2009), consultancy engagements related to development of flexible mechanisms of Kyoto Protocol (UNDP Belarus) and climate-proof cities (EuropeAid), institutional research grants at Central European University for ecosystem vulnerability research, and FP5-7 projects related to ecosystem management and governance of natural resources. Dr. Shkaruba has vast experience with capacity building for higher education in Eastern Europe, including involvement to four Tempus, five Jean Monnet, two CBHE Erasmus+ and three Visegrad projects, and organisation of research training networks for early stage faculty and researchers in Belarus, Moldova, Russia, Ukraine through grants of Swedish Institute, Asia-Pacific Network, Open Society Foundation. Recent publications: 1. Shkaruba A., Skryhan H. (2019). Chernobyl science and politics in Belarus: The challenges of post-normal science and political transition as a context for science–policy interfacing. Environmental science & policy, 92, 152-160. 2. Maksymenko N.V., Titenko G.V., Utkina K.B., Nekos A.N., Shkaruba A.D. (2019). Solving current environmental problems by harmonization of doctoral programs with European standards. Visnyk of V.N. Karazin Kharkiv National University, series 'Geology. Geography. Ecology', 50, 178-196. https://periodicals.karazin.ua/geoeco/article/view/13312 3. Niedziałkowski K., Shkaruba A. (2018). Governance and legitimacy of the Forest Stewardship Council certification in the national contexts–A comparative study of Belarus and Poland. Forest Policy and Economics, 97, 180-188. 4. Shkaruba A., Kireyeu V., Likhacheva O. (2017). Rural–urban peripheries under socioeconomic transitions: Changing planning contexts, lasting legacies, and growing pressure. Landscape and Urban Planning, 165: 244-255. 5. Shkaruba, A., Kireyeu, V., Skryhan, H. (2015). Heavy snowstorm in urban areas - sense-making processes for anticipatory adaptation, Urban Climate.

	6. Forest Governance (2014). Belarusian State Technological University, Minsk, 399 pp. (in Russian) 7. Shkaruba, A.D. and Kireyeu, V.V. (2013). Recognising ecological and institutional landscapes in adaptive governance of natural resources. Forest Policy and Economics 36: 87-97. 8. Banaszak-Otto, I., Shkaruba, A., Kireyeu, V. (2011). The Rise of Multi-Level Governance for Biodiversity Conservation in Belarus. Environment and Planning C, 29: 113-132.
Prof. Dr. Valdo Kuusemets	Valdo Kuusemets, PhD, professor of environmental protection. His research is focused on the studies of biodiversity depending on anthropogenic, especially agricultural production intensity, the impact of management practice on the biodiversity, also on environmental technologies and water resources and development, adaption of climate change in urban areas. He has been scientific leader of several EU research projects and ERASMUS projects. He has successfully supervised 5 PhD students and published more than 50 peer-reviewed articles (H-index 14). Head of MSc and BSc curricula on Environmental Studies. Currently he is leading the Life+ project "Development of sustainable and climate resilient urban storm water management systems for Nordic municipalities (2018-2023). Recent publications: 1. Villoslada Peciña, Miguel; Ward, Raymond D.; Bunce, Robert G. H.; Sepp, Kalev; Kuusemets, Valdo; Luuk, Ott (2019). Country-scale mapping of ecosystem services provided by semi-natural grasslands. Science of the Total Environment, 661, 212−225.10.1016/j.scitotenv.2019.01.174. 2. Villoslada, Miguel; Bunce, Robert G. H.; Sepp, Kalev; Jongman, Rob H. G.; Metzger, Marc J.; Kull, Tiiu; Raet, Janar; Kuusemets, Valdo; Kull, Ain; Leito, Aivar (2017). A framework for habitat monitoring and climate change modelling: construction and validation of the Environmental Stratification of Estonia. Regional Environmental Change, 17, 335−349.10.1007/s10113-016-1002-7. 3. Lang, Mait; Vain, Ants; Bunce, Robert Gerald Henry; Jongman, Rob; Raet, Janar; Sepp, Kalev; Kuusemets, Valdo; Kikas, Tambet; Liba, Natalja (2015). Extrapolation of in situ data from 1-km squares to adjacent squares using remote sensed imagery and airborne lidar data for the assessment of habitat diversity and extent. Environmental Monitoring and Assessment, 187 (3), 1−16.10.1007/s10661-015-4270-7. 4. Leito, A.; Bunce, R. G. H.; Külvik, M.; Ojaste, I.; Raet, J.; Villoslada, M.; Leivits, M.; Kull, A.; Kuusemets, V.; Kull, T.; Metzger, M. J.; Sepp, K. (2015). The potential impacts of changes in ecological networks, land use and climate on the Eurasian crane population in Estonia. Landscape Ecology, 30 (5), 887−904.10.1007/s10980-015-0161-0. 5. Liivamägi, Ave; Kuusemets, Valdo; Kaart, Tanel; Luig, Jaan; Diaz-Forero, Isabel (2014). Influence of habitat and landscape on butterfly diversity of semi-natural meadows within forest-dominated landscapes. Journal of Insect Conservation, 18 (6), 1137−1145.10.1007/s10841-014-9724-7. 6. Liivamägi, Ave; Kuusemets, Valdo; Luig, Jaan; Kask, Kadri (2013). Changes in the distribution of Clouded Apollo Parnassius mnomosyne (Lepidoptera: Papilionidae) in Estonia. Entomologica Fennica, 24 (3), 186−192. 7. Diaz-Forero, Isabel; Kuusemets, Valdo; Mänd, Marika; Liivamägi, Ave; Kaart, Tanel; Luig, Jaan (2013). Influence of local and landscape factors on bumblebees in semi-natural meadows: a multiple-scale study in a forested landscape. Journal of Insect Conservation, 17 (1), 113−125.10.1007/s10841-012-9490-3.

Partner number		**P4**
Organisation name & acronym	Odessa State Environmental University (OSENU)	

F.3.1 - Aims and activities of the organisation

Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Odessa State Environmental University (OSENU), founded in 1932, is the key higher education centre in Ukraine in the area of Environmental Studies, Hydrometeorology, Management, Computer Science and Water Bio-Resources. OSENU offers both full-time studies (1350 BSc, 150 MSc and 55 PhD students) and distance learning facilities (1200 students). In the field of Hydrometeorology OSENU has been training specialists for the WMO for more than 50 years. The curricula for training specialists meet all international standards and are acknowledged by hydrometeorological services all over the world. Since 1957 the University has provided training for some 1600 specialists form more than 70 countries, including circa 150 Candidates and Doctors of Science. Two of OSENU graduates, members of IPCC, Alioune Ndiaye and Oleg Sirotenko were among the awarded the Nobel Peace Prize (2007). For the time being foreign citizens of 27 countries have been provided education at the University.

Training at OSENU Hydrometeorological Institute is provided in the field of Meteorology, Agrometeorology, Hydrology, Oceanology, Hydrography. Within the domain of Meteorology as a speciality there exist the following specializations: Weather Forecasting, Aeronautical Meteorology, Radiometorology and Radiolocation, Polar Meteorology, Atmospheric Geophysics and Climatology.

The Faculty of Master and Post-Graduate Studies coordinates the annual scientific conference for OSENU young scientists, as well as the activity of the Council of Young Scientists and the Board for Students' Research. Furthermore, OSENU hosts the annual International Conference on Regional Environmental Problems for young scientists and the biannual International Conference for Young Scientists on Topical Issues of Modern Hydrometeorology.

In 2012 a Coordination Centre for Training and Retraining of Specialists in Agricultural Meteorology, Agroecology and Climate Change from the CIS countries was established as a result of the joint actions under 159352-TEMPUS-FI-TEMPUS-JPHES, 159173-TEMPUS-DE-TEMPUS-JPCR and 511390-TEMPUS-1-2010-1-SK-TEMPUS-JPCR projects, and in 2014 it became an International Training Centre in Environmental Science. In 2012-2014 OSENU participated in ORIENTGATE project ('A structured network for integration of climate knowledge into policy and territorial planning', INTRA-5100828) under EU SEE TCP.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	83
Number of students	about 1 400 students, graduate students, doctoral students
Number of Bachelor degrees offered	about 910
Number of Master degrees offered	about 420
Number of PhD degrees offered	about 80
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	1. Adaptive learning environment for competence in economic and societal impacts of local weather, air quality and climate, 561975-EPP-1-2015-1-FI-EPPKA2-CBHE-JP, Project coordinator: University of Helsinki (Finland) 2. Integrated Doctoral Program for Environmental Policy, Management and Technology, 586471-EPP-1-2017-1-EE-EPPKA2-CBHE-JP, Project coordinator: Estonian Life Science University, Tartu (Estonia) Developed curricula for the following specialties: 1. 'Environmental Science', specialization 'Foodstuff Expertise and Quality Control' (educational disciplines: Monitoring of Soil-and-Plant Cover Pollution; Modelling of Soil, Plant and Animal Product Contamination; Anthropogenic Climate Change and Its Influence on Agricultural Production; Long-Term Agrometeorolgical Forecasts; Ecological Fundamentals of Agricultural Ecosystems; Bioindication and Biotesting; Modern Aspects of Agroclimate Resource Assessment; Assessment of Hazardous Weather Phenomena Impact on Plant Productivity; Biological Fundamentals of Yield Rate and Quality; Simulation of Crop Disease

	Development and Plant Pest Propagation; Modelling of Hydrometeorological Regime of Vegetative Cover; Modern Models of Agrophytocoenosis Productivity; Environmental Aspects of Vegetable Growing and Viticulture (at the Production Facilities and Scientific-Research Institutions); Resource-Saving at Factory-Farm Complexes and Organic Farming; Climate Change and Biotechnologies; Research Methods in Agroecology; Foreign Language for Specific Purposes) 2. 'Environmental Science and Control', Specialization – Agroecology (Assessment of Hazardous Phenomena Impact on Crop Productivity; Environmental Bases of Agriculture and Agricultural Radioecology; Environmental Farming and Biotechnologies; Long-term Agrometeorological Forecasts; Modelling of Agrophytocoenosis Productivity under Conditions of the Climate Change)

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

OSENU will lead the WP 1, 2 and 7, being responsible for Information Collection and Analysis (WP1), development of the research-and-education platform (WP2), as well as for development of the CentrEx web site and DL Portal, and promotion activities (WP7).
OSENU will take active part in development of the research-and-education platform, elaboration of CentrEx courses and their subsequent piloting.
The faculty and administrative personnel of OSENU will participate in trainings as well as quality assurance and university management; faculty members will take part in academic mobilities between project partners.
P5 will host the training sessions on adaptation of the Competencies Framework for Climate Services on special climatic and physical-geographic conditions of Ukraine.
P5 will take an active part in training on the Climate Services for various economic sectors for staff of sectoral universities

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	Climate Change and Sustainability. Climatology, foundation for climate services. Climate service training. Climate change services. Climate change and adaptation. Economics of climate change. Climate, Energy and Disaster Resilience. Climate Change and the Financial Sector. Climate Smart Agriculture. Introduction to climate change and health. Climate Change and Water Resources Management. Impacts of Climate Change on Urban Areas and Nature-Based Solutions for Adaptation. Climate change and the building sector. Climate change adaptation and mitigation. Climate and Disaster Resilience. Introduction to climate change. R and Python for data analysis.

	Visualisation, mapping and plotting of data. Introduction to Geographic Information Systems. Improvement to Communication Skills. Introduction to Economics: Basic Concepts and Principles Content.

For each course please fill the following nested table:

Title	**Climate Change and Sustainability**
Level of study	Doctoral (Third Level)
List of subjects and credits (ECTS or comparable credit system) for each of them	Sustainable Development Goals (1). Understanding the Earth System (2). Trajectories of the Earth System in the Anthropocene (2). Planetary boundaries (2). Impacts of Climate Change on Sustainable Development (2). Climate Policy (2). Ways of Transition to Sustainability under climate change (3). Climate Change and Local, Regional and Devolved Government (3). Communicating Climate Change Adaptation: from strategy development to implementation (3).
Estimated date of accreditation and accreditation body	November –December 2022
Estimated starting date of the new programme	January –February 2023
Number of students to be accepted in the first year/ second year	5/5
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climatology, foundation for climate services**
Level of study	master's (second level)
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge (2). The international and regional climate programs (2). Information needs for end-users in various economic sectors (2). Observations and data quality (2). Different data formats that a climate service can use and manage (2). Database management system (2). Model, scenario and data uncertainties of climate projections and seasonal forecasts (5). Statistical downscaling, bias correction and other processing tools (4). Usage of socio-economic data (3). Socio-economic benefits of Climate Services (3).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	Intership/subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climate change services**

Level of study	master's (second level)
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system and their components (2). Observations and data quality (1). Different data formats that a climate service can use and manage (1). Introduction in climate change (2). Climate Change Impacts (2). Modelling the climate system (4). Climate risk and vulnerability assessments (3). Coupling the economy and the climate (3). Usage of socio-economic data (2). Climate Policy (3). Mitigation and adaptation strategies in different sectors, including land and bioenergy, cities and transport, power generation and geoengineering (5).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	intership/ subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climate Change and Adaptation**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Basic Climate Change Science: Global Warming, Greenhouse Gases and Consequences. Climate Change Scenarios, Responses to Climate Change – Mitigation and Adaptation and Justice. Impacts of Climate Change. Vulnerability to Climate Change. Linkage between Climate Change and Disaster. Adaptation to Climate Change. Link between Adaptation to Climate change and Development. Methods and Tools: Impacts, Vulnerability and Adaptation. Total number of credits ia 6
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	8
Internship /placements (if applicable)	subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climate Services Training**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge. The international and regional climate programs. The tasks and missions of a national center for climatology. Meteorological observations and data quality. Data acquisition. Data management tools. Data control. Data generation Information needs for decision makers in various sectors.

	Coupling the economy and the climate. Usage of socio-economic data. Climate Policy. Total number of credits is 6.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	8
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climate change adaptation and mitigation**
Level of study	training courses for policy- and decision-makers
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system and their components. Climate change and global warming. Impacts of climate change. Application of climate data in policy, management and planning. Climate Policy. International climate change agreements. Design of Climate Change Mitigation and Adaptation Strategies. Economics of Climate Mitigation and Adaptation. Case studies. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	5/5
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climate Smart Agriculture**
Level of study	training courses for experts in agriculturre
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system. Causes of climate change. Impacts of agriculture on climate change. Impacts of climate change on agriculture and food security. Application of climate data in management and planning. Economics of climate change. Basics of adaption and mitigation in the agricultural sectors. Methodologies for climate change impact assessment. International frameworks and National Adaptation Planning. Case studies. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office

	Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities

Title	**Introduction to climate change and health**
Level of study	training courses for health-care experts
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system. Causes of climate change. Overview of Health Impacts of Climate Change, Adaptation, Mitigation, and Co-benefits. Methodologies for climate change impact assessment. Extreme Weather: Heat, Storms, & Floods. Water-borne Infections and Vector-borne Diseases. Collaboration with WMO and the World Health Organization. Climate-smart health care. Case studies. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities

Title	**Climate Change and Water Resources Management**
Level of study	training courses for hydrologists, experts in water management
List of subjects and credits (ECTS or comparable credit system) for each of them	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities

Title	**Impacts of Climate Change on Urban Areas and Nature-Based Solutions for Adaptation**
Level of study	training courses for experts from municipal organizations
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system. General Impact and Consequences of Climate Change for Urban Areas. Methodologies for climate change impact assessment. Cities as innovators: adaptation and mitigation. Climate change adaptation possibilities using green and blue infrastructures and Nature-

	Based Solutions. Nature-based Solutions for Disaster Risk Reduction. Economics of Climate Mitigation and Adaptation. Collaboration with WMO and the United Nations Office for Disaster Risk Reduction. Case studies. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities

Title	**Climate change and the building sector**
Level of study	training courses for experts in technical design and construction
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system. Fundamentals of climate change. Identifying and assessing climate change impacts and risks. International frameworks and National Adaptation Planning. Planning and Design Aspects of Green and Blue Infrastructures and Nature-Based Solutions for Adapting to Climate Change. Smart cities. Eco-villages. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities

Title	**Climate, Energy and Disaster Resilience**
Level of study	training courses for experts in energy sectors
List of subjects and credits (ECTS or comparable credit system) for each of them	The fundamentals of climate change. Energy relevant changes in climate and weather. Energy sector vulnerabilities to climate change and natural disasters. International frameworks and National Adaptation Planning. Basics of adaption and mitigation in energy sector. Disaster risk reduction. Low-emission development strategies. Renewable energy technologies. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if	Main PC, 12 PC Stations for Training Classes,

applicable)	Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities

Title	**Climate Change and the Financial Sector**
Level of study	training courses for representitives of banks, investors, insurers
List of subjects and credits (ECTS or comparable credit system) for each of them	Fundamentals of Climate Change. Climate change impacts on financial sector. Methodologies for climate change impact assessment. Climate and financial risks. Usage climate information and climate services for planning and for operational purposes. Case studies. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climate and Disaster Resilience**
Level of study	training courses for experts in climate-dependent economic sectors
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system. Fundamentals of Climate Change. Impacts of disasters and climate change on nations, societies, cultures, economies and the environment. Key international frameworks such as the Sendai Framework and the Paris Climate Agreement. The main approaches for Disaster Risk Reduction and Climate change adaptation and their underlying concepts. Total number of credits is 3.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities

Title	**Economics of climate change**
Level of study	module or its parts will be implemented in various cources for various target groups
List of subjects and credits (ECTS or comparable credit system) for each of them	Introduction to Climate Change. The climate since the industrial revolution. Coupling the economy and the climate. Climate policy. The financial risks of climate change. Total number of credits is 2.
Estimated date of accreditation and accreditation	November-December 2022

body	
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Introduction to climate change**
Level of study	for the general public
List of subjects and credits (ECTS or comparable credit system) for each of them	Climate Change Impacts, Climate change mitigation and adaptation, Climate change and society, The Impact of Climate Change on Public Health. Total number of credits is 2.
Estimated date of accreditation and accreditation body	March-April 2023
Estimated starting date of the new programme	May-June 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	3
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**R and Python for data analysis**
Level of study	experts in climate services
List of subjects and credits (ECTS or comparable credit system) for each of them	usage of the possibilities of the R-INSTAT platform and standard libraries of Python, statistical data processing and analysing, visualisation and plotting of data Total number of credits is 2.
Estimated date of accreditation and accreditation body	September-October 2022
Estimated starting date of the new programme	November-December 2022
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	2
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities of Ukrine.

Title	**Introduction to Geographic Information Systems**
Level of study	experts in climate services
List of subjects and credits (ECTS or comparable credit system) for each of them	Definition of Geographic Information Systems (GIS). GIS software: ArcGIS, MapInfo, QGIS, Surfer. ArcGIS and QGIS interface. Data bases and their creation. Total number of credits is 2.
Estimated date of accreditation and accreditation body	September-October 2022
Estimated starting date of the new programme	November-December 2022
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	2

Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities of Ukraine

Title	**Improvement to Communication Skills**
Level of study	experts in climate services
List of subjects and credits (ECTS or comparable credit system) for each of them	Learn to Listen. Studying and Understanding Non-Verbal Communication. Emotional Awareness and Management. Questioning Skills. Effective Transmitting Massangers. Power of strong communication skills in the Workplace. Total number of credits is 2.
Estimated date of accreditation and accreditation body	September-October 2022
Estimated starting date of the new programme	November-December 2022
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	2
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities of Ukraine.

Title	**Introduction to Economics: Basic Concepts and Principles Content**
Level of study	experts in climate services
List of subjects and credits (ECTS or comparable credit system) for each of them	What is Economics? Demand & Supply. Free market hypothesis. Cost, efficiency and scarcity. Introduction to Microeconomics. Introduction to Macroeconomics. Game Theory in Economics. Price Elasticity of Demand. Total number of credits is 2.
Estimated date of accreditation and accreditation body	September-October 2022
Estimated starting date of the new programme	November-December 2022
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	2
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Visualization, mapping and plotting of data**
Level of study	experts in climate services
List of subjects and credits (ECTS or comparable credit system) for each of them	Creation and editing of vector objects. Objects' geometry and shape. Point, linear and polygonal objects. Object topology. Elements of spatial analysis in GIS.
Estimated date of accreditation and accreditation body	September-October 2022
Estimated starting date of the new programme	November-December 2022
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	2
Internship /placements (if applicable)	N/A

List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities of Ukraine.

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	N/A
For each course please fill the following nested table:	

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
% of the modernised subjects compared to total subjects included in the course	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions) Please fill in if you are applying for this type of project and define clear the activities to be held in your institution* (limit 2000 characters)

N/A

Provide information on (if applicable)

List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A
Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A

Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution (limit 2000 characters)

Active cooperation of Odessa State Environmental University, sectoral Ukrainian universities, stakeholders, WMO and various professional international organizations within the Global Campus facilitated by the Global Framework for Climate Services will contribute two of the UN sustainable development goals - Build Partnerships for the Goals and Organize Climate Action.
Strengthening of relations between HEIs and the wider economic and social environment will be achieved throught sustainable and systematic cooperation between the Hydrometeorological Centers of Ukraine and the Consortium universities through consultations, seminars, and trainings in order to discuss the effectiveness of training programmes and to rapidly provide new focus for training and adjust training courses in response to emerging new needs or competencies in production activities due to climate change and need to mainstream them in climate-dependent economic sectors at the national level.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	Courses for different levels of LLL in the field of Climate Service Courses for development of social-economic and information and communication competences and skills in specialists in the field of Climate Service Courses in climate change and the related aspects for experts in climate-dependent economic sectors, policy- and decision-makers Modules on the Climate Change Economics in order to implement them in the courses of general and specialized Climate Service Massive open on-line courses for enhancing climate literacy for the general public The virtual research-and-education platform "Climate services"
How will the impact of these results be measured in your HEI?	Reports on the quality assessment of the TRNG programmes. The certified DL courses and MOOCs available online. Climate Service Platform Guidelines is implemented.
What financial means and human and other resources will be provided to sustain these results after the project ends?	Phased implementation of all of the work packages and introduction of the deliverables will initiate several interconnected self-sustained cycles (virtuous circles), which will ensure persistently improved quality of the project outcomes/outputs, stimulate collaboration between climate-dependent economic sectors and stakeholders, guarantee cost-effectiveness and sustainability of education and training. Implementation of general and specialized climate services in the National Hydrometeorological Services will form several external virtuous circles covering all climate-dependent economic sectors and all levels of the society's functioning and internal virtuous circles are determined by interaction of the academic institutions with sectoral Universities and climate-dependent economic sectors.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of***

	recent publications related to the domain of the project.
Sergiy Stepanenko	DSc (Physics and Mathematics), Prof., Rector of Odessa State Environmental University, Chairman of the Council of Rectors of the Odessa region, Head of the OSENU academic group in 544524-TEMPUS-1-2013-1-PL-TEMPUS-SMHES and 561975-EPP-1-2015-1-FI-EPPKA2-CBHE-JP, and participated in 517271-TEMPUS-1-2011-1-DE-TEMPUS-JPCR. Key specialist in Mesoscale Meteorology, Boundary Layer Meteorology, Regional Aspects of Climate Changes and Adaptation to Their Effects, Ecological Education and Education Sustainable Development. Under his leadership 8 PhD thesis were defended, a group of MSc and PhD students have been working. Took active part in development of educational standards and curricula of 3-cycle system (bachelor – specialist – master) for Training of Specialists in the field of 'Environmental Science, Environmental Control and Sustainable Nature Management', as well as development of a speciality of Climatology for master level training in Ukraine. An author of 153 published scientific and methodological papers, including 3 monographs, 5 textbooks, a tutorial and 2 lecture summaries. Main publications in the project topic for the last five years: 1. Khetselius, O.Yu., Glushkov A.V., Stepanenko S.N., Sofronkov A.N., Svinarenko A.A., Ignatenko A.V. New theoretical approach to dynamics of heat-mass-transfer, thermal turbulance and air ventilation in atmosphere of an industrial city // Physics of Aerodispersed Systems, 2019. Vol. 57. pp. 104-111 2. Glushkov, A.V., Khetselius O.Yu., Stepanenko S.N., Safronkov A.N., Svinarenko A.A., Buyadzhi V.V. New energy, angle momentum and entropy balance approach to modeling climate and macroturbulen atmospheric dynamics, heat and mass transfer at macroscale. II. Computational algorithm. // Physics of Aerodispersed Systems, 2019. Vol. 57. pp. 93-103 3. Stepanenko, S.M., Polovyi, et al., 2018: Climatic risks in the sectors of the national economy of Ukraine under climate change conditions. 'TES', 547 p. (Uk) 4. Stepanenko S., Voloshine V., Kuryshyna V., Ivus H., 2017: Assesment of the surface heat budget components using a model of the surface layer energy budget. International Journal of Research in Earth & Enviromental Science, Vol. 7, No. 1. 5. Khokhlov, V.M., Stepanenko, S.M., 2015: Coastal Lagoons in Europe. Integrated Water Resource Management / Ana I. Lillebø, Per Stålnacke and Geoffrey D. Gooch (eds.). – London: IWA Publishing, 227 p. 6. Vladymyrova, O.G., Loieva, I.D., Safranov, T.A., Stepanenko, S.M., 2015: For the 25th Anniversary of Environmental Education Formation and Development at Odessa State Environmental University. Visn. Odes. derž. ekol. unìv., #19. (Uk) 7. Stepanenko, S.M., Polovyi, et al., 2015: The Climate Change and Its Impact on Economic Sectors in Ukraine. 'TES', Odessa, 518 p. (Uk) 8. Khokhlov, V.M., Stepanenko, S.M., 2015: Coastal Lagoons in Europe. Integrated Water Resource Management / Ana I. Lillebø, Per Stålnacke and Geoffrey D. Gooch (eds.). – London: IWA Publishing, 227 p. 9. Stepanenko, S.M., 2013: Climate Dynamics and Modelling. Textbook. Ekologiya, Odessa, 204 p. (Uk) 10. Stepanenko, S.N., 2013: Reasons of Shallowing of Kuialnik Estuary and Ways to its Saving. Ekologiya, Odessa, 36 p. (Ru)
Anatolii Polovyi	DSc (Geography), Professor, Head of the Department of Agrometeorology and Agroecology, Founder of a scientific school of modelling plant production process (35 PhDs and 2 DScs), author of 4 monographs and a fundamental textbook - "Agricultural Meteorology", co-author of "Practical Course in Agricultural Meteorology", author of the textbooks of "Methods of Experimental Agrometeorological Research", "Anthropogenic Pollution of Geological Environment and Soil-and-Plant Cover", "Long-term Agrometeorological Forecasts" and "Modelling of the Hydrometeorological Regime and Productivity of Agroecosystems". Head of the OSENU academic group in 159173-TEMPUS-DE-TEMPUS-JPCR and 511390-TEMPUS-1-2010-1-SK-TEMPUS-JPCR, and currently participant of 544524-TEMPUS-1-2013-1-PL-TEMPUS-SMHES and 561975-EPP-1-2015-1-FI-EPPKA2-CBHE-JP project. Main publications for the recent years: 1. Stepanenko, S.M., Polovyi, et al., 2018: Climatic risks in the sectors of the national economy of Ukraine under climate change conditions. 'TES', 547 p. (Uk) 2. Polovyi, A.M., 2017: Development of agrometeorological and agroclimatic research at OHMI - OSENU. The First All-Ukrainian Hydrometeorological

	Congress with International Participation, Odessa, 22-23 March 2017. 3. Polevoy A.N., Mykytiuk, A.Yu., 2016: Modelling of CO_2, CH_4, NO, N_2O Emission from Organic Soils (PEAT-GHG-MODEL). Issues on Environmental Monitoring and Ecosystem Modelling, Vol. 27, #1. Moscow, Institute of Global Climate and Ecology of the Federal Service for Hydrometeorology and Environmental Monitoring and the Russian Academy of Sciences, p. 5-26. doi:10.21513/0207-2564-2016-1-5-26 (Ru) 4. Polevoy A.N., Kouzmova K., Bozhko L.E.Thermal resources of Ukraine in the conditions of climate change. Agricultural Science, Volume VIII, Issue 19, 2016, p. 137-144. 5. Polovyi, A.M., et al., 2015: The Climate Change and Its Impact on Economic Sectors in Ukraine. 'TES', Odessa, 518 p. (Uk) 6. Polovyi, A.M., Floria, L.V., 2015: The Modelling of the Agroclimatic Resources Influenced on the Formation of the Crop Productivity. International Journal of Research in Earth and Environmental Sciences, Pakistan, V. 3, No. 1, P. 16-20. 7. Polevoy A.N., Diulger, M.A., 2014: Formation of Agro-Ecological Levels of Stubble Millet Yield in Ukraine under Conditions of the Climate Change. Bulletin of the Brest University, #2, P. 103 - 109. (Ru) 8. Polevoy A.N., Muradyan, O.L., 2014: The Forecast of Propagation of the European Grapevine Moth Generations on a Vine Plant. Bulletin of BSU, Series 2: Chemistry, Biology, Geography. Publishing House of the Belarusian State University (Minsk), #1, P. 93-96. (Ru) 9. Polevoy, A.N., Sinitsyna, V.V., 2014: Results of Numerical Experiments with Model of Corn Seeds Germination and Sidling Emergence. Agricultural Sciences, Plovdiv, Vol. VI, Issue 15, P. 69-77. 10. Polovyi, A.M., 2013: Influence of Anthropogenic Climate Change on Agriculture. 'Ecology', Odessa, 105 p. (Uk)
Valeriya Ovcharuk	DSc (Geography), Associate Professor of the Department of Land Hydrology, Director of the Hydrometeorological Institute of OSENU. Member of the Presidium of the Ukrainian Meteorological and Hydrological Society, Deputy Chairman of the Ukrainian Meteorological Society, member of the International Association of Hydrological Sciences, member of the Ukrainian Geographical Society. Area of scientific interests: hydrological extremes under changing climate. Authored over 200 published scientific papers (7 monograph, textbooks, articles, conference papers, including more than 50 international publications) on hydrological topics. Participant of expeditionary studies jointly with scientists of the New York University (1996-1997), international scientific seminars NATOARW (2003-2005), PannEx (2016-2019), 5th Open Science Meeting PAGES-2017, Women's Marine Leadership Workshop, TECO Conference, JCOMM-5 (2017), 2nd Baltic Sea in Transition (2018-2019) and the "Danube Floodplain Project". Main publications in the project topic for the recent years: 1. Blöschl, G. et al (Valeryia Ovcharuk). Changing climate both increases and decreases European river floods. Nature, 2019, 573(7772), pp. 108-111 https://doi.org/10.1038/s41586-019-1495-6 2. Ovcharuk V. A., Prokofiev O. M., Todorova O. I., Kichuk N. S. The study of the periodicity of catastrophic spring floods on the territory of Ukraine// *Visnyk of V N Karazin Kharkiv National University-Series Geology Geography Ecology*. (2019). v.50.pp.136- 147.https://doi.org/10.26565/2410-7360-2019-50-10 3. Valeriya Ovcharuk, Eugeny Gopchenko, Maryna Goptsiy. Study of modern trends in the time series of annual maximum runoff of rivers of Transcarpathia//Book of Abstracts 5th PannEx Workshop, 3-5 June 2019, Novi Sad, Serbia, P.19-20. 4. Valeriya Ovcharuk, Eugeny Gopchenko, Maryna Goptsiy, Nataliya Kichuk. Model of formation maximal runoff on the small river in the Ukrainian part of Danube basin // Book of abstracts XXVIII conference of the Danubian countries on hydrological forecasting and hydrological bases of water management. Kyiv, Ukraine, November 6-8, 2019. P.34 5. Valeriya Ovcharuk, Eugene Gopchenko. Climate change influence on maximal runoff rivers of Baltic sea basin within Ukraine // International Baltic Earth Secretariat Publication No. 15, October 2019. C. 31 – 32. 6. V. Ovcharuk, E. Gopchenko. Impact of Climate Change on Water Resources on Ukraine on Example of Spring Floods. ABSTRACT BOOK 27th IUGG General

	Assembly, July 8-18, 2019, H16p-031 https://www.czechin.org/cmPortalV15/CM_W3_Searchable/iugg19/normal#!abstractdetails/0000723060 7. V. Ovcharuk, N. Kichuk, E. Bojarintsev and L. Kushchenko. Water resources management in the region of Odessa (Ukraine). International Journal of Recent Scientific Research. Vol. 9, Issue, 2(A), January, 2018, pp. 23758-23762 DOI: http://dx.doi.org/10.24327/ ijrsr.2018.0902.1532 8. Ovcharuk V., Gopchenko E. Regional model of forming catastrophic spring runoff in condition climate change on the plain rivers Black sea basin in Ukrain // International Baltic Earth Secretariat Publication; MedCORDEX-Baltic Earth – COST Workshop "Regional Climate System Modelling for the European Sea Regions" Universitat de les lIIes Baleares, Palma de Mallorca, Spain 14-16 March 2018 9. Valeriya Ovcharuk, O. Todorova, E. Myrza The maximum runoff of small rivers of the Mountainous Crimea flowing into the Black Sea in modern climatic conditions // 2nd Baltic Sea in Transition. Helsingor, Denmark, 11 to 15 June 2018. P. 162-163 10. Valeriya Ovcharuk. The modern calculating characteristics of the runoff at the Wisla River within Ukraine // Multiple drivers for Earth system changes in the Baltic Sea region. Tallinn University of Technology, Tallinn, Estonia 26-27 November 2018. 11. Blöschl, G., Ovcharuk, V., 2017: Changing climate shifts timing of European floods. Science. Vol. 357, Issue 6351, pp. 588-590, doi:10.1126/science.aan2506. 12. V. Ovcharuk, E. Bojarintsev, N. Kichuk, L. Kushchenko, 2017: The factors of forming minimum runoff of small rivers Transcarpathia. Climate System of the Pannonian Basin (PannEx) 3rd Workshop, March 20-22, 2017, Cluj-Napoca, Romania. 13. I. Semenova, V. Ovcharuk, 2017: Droughts of the last centenary period in Ukraine. PAGES 5th Open Science Meeting in Zaragoza, Spain, May 2017. http://pastglobalchanges.org/download/docs/pdf/semenova-poster1-pages17.pdf 14. Ovcharuk, V.A., Todorova, Ye.I., 2017: A Model for Calculation of the Maximum Runoff of Rain Floods in the Conditions of Active Influence of the Underlying Surface (on the Example of the Rivers in the Mountainous Crimea). International conference on 'Geography in Global Context: Achievements and Challenges', Akaki Tsereteli State University, Kutaisi, Georgia, 3-4 June 2017. (Ru) 15. Ovcharuk V., Todorova O., 2016: Determination of characteristics maximal runoff Mountain Rivers in Crimea. J. Fundam. Appl. Sci. 2016, 8(2), 525-541. 16. Gopchenko, Ye.D., Ovcharuk, V.A., Todorova, Ye.I., 2016: The Problems of Creation of Normative Documents in the Area of Calculation of the Maximum Runoff Characteristics for the Rivers of Ukraine and the Possible Ways to Solve them. Geographical Bulletin, 1(36), pp. 49-57. (Ru)
Inna Semenova	DSc (Geography), Professor of the Department of Meteorology and Climatology. Area of scientific interests: extreme weather, droughts, atmospheric circulation. Author of more than 30 scientific papers, 3 monographs (2 with co-authors), 3 lecture summaries, 14 guidelines. Teaching experience in Satellite meteorology, Regional synoptic processes, Mesometeorology and nowcasting. Supervisor of departments' research team "Spatiotemporal dynamics of extreme weather events in Ukraine under the climate changes". Completed the international training courses organized by EUMETSAT: on satellite meteorology Baltic+ (2016, 2017, online + classroom in Warsaw); on meteorological simulation SIM 2018, Helsinki (under project ECOIMPACT). Participant of numerous international open science events organized by WCRP, GEWEX, WMO, IAMAS, EUMETSAT, PannEx etc. Main publications in the project topic for the recent years: 1. Slizhe, M., Semenova, I., Pianova, I., El Hadri, Y. (2018). Dynamics of Macrocirculation Processes Accompanying by the Dry Winds in Ukraine in the Present Climatic Period. Hrvatski Meteorološki Časopis, 53 (53), 17-29. 2. M. Slizhe, I. Semenova, Y. El Hadri. Synoptic Conditions for Dry Winds in

	August 2010 in Ukraine // Journal of Geography, Environment and Earth Science International. 15(3): 1-11, 2018; Article no. JGEESI.41323. DOI: 10.9734/JGEESI/2018/41323. 3. I. Semenova, M. Slizhe. Distribution of droughts and dry winds in the Black Sea Steppe province under current climate conditions // Conference Proceedings. 2nd Baltic Earth Conference: The Baltic Sea Region in Transition. 11-15 June 2018, Helsingør, Denmark. P. 101-102. 4. I. Semenova, M. Slizhe. Distribution of dry winds in Ukraine under related atmospheric macrocirculation processes // 8th GEWEX Open **Science Conference:** Extremes and Water on the Edge. May 6 - 11, 2018. Canmore, Alberta, Canada. 5. Semenova I., Sumak K. Cyclonic activity in cold season over territories of Belarus and Ukraine and its relation to the warm season droughts // Croatian Meteorological Journal. 2017 (2018), N 52. P. 59-73. 6.- Baranka, Gy., Bartók, B., Bozó, L., Croitoru, A.-E., Ferenczi, Z., Firanj Sremac, A., Grisogono, B., Jericevic, A., Labanc, K., Lalic, B., Lázár, D., Mahon, A., Prtenjak, M. T., Semenova, I., Szintai, B., Weidinger, T. Understanding Air Quality under Different Weather and Climate Conditions in the Pannonian Basin. Background material for PannEx. White Book. FQ2 (Flagship Questions). (Edited by Tamás Weidinger) // Egyetemi Meteorologiai Füzetek, №29, 2017. - Publisher: Department of Meteorology, Eötvös Loránd University, Budapest, 72 p. 7.- Semenova I.G. Synoptic and climatic conditions of drought formation in Ukraine. Monograph. Kharkiv: FOP Panov A.M., 2017. 236 p. (in Ukr). 8. Semenova I. An assessment of evapotranspiration trends within warm season in Ukraine // The EUMETSAT Meteorological Satellite Conference 2017, Rome, Italy, 2 - 6 October 2017. Session 7, # 32. 9. Semenova I. Influence of quasi-biennial oscillation on the drought conditions and cereal crop yields in Ukraine // Joint IAPSO-IAMAS-IAGA Assembly 2017, Cape Town, South Africa. 27 August-1 September 2017. Abstract Book, p. 559. 10. I. Semenova, K. Sumak. Regional features of winter cyclonic activity over Belarus and Ukraine and its relation with warm season droughts //International Symposium Present Environment and Sustainable Development, 2-4 June 2017, IASI, Romania. **Abstract book, p.** 80-81. 11. Semenova I. Assessment of variability and distribution of drought over the Kievan Rus' territories during the 11-17 centuries //The **5th PAGES** Open Science Meeting (Past Global Changes (PAGES)**),** 9-**13 May 2017**. Zaragoza, Spain. Abstract book. P. 373-374. 12. I. Semenova. Assessment of the atmospheric blocking processes in Europe affecting on drought formation in Ukraine // 3rd PannEx workshop on the climate system of the Pannonian basin (PannEx), 20-22 March 2017, Cluj-Napoca, Romania. Abstract book, p. 47. 13. Semenova I. Basis of droughts catalog for Ukraine in modern period // **Abstract book -** The **International Conference on Regional Climate-CORDEX 2016** (ICRC-CORDEX), 17-20 May 2016, Stockholm, Sweeden. P. 292. 14. Semenova I. Blocking of zonal flow and related droughts in Ukraine // Workshop on Atmospheric Blocking, 6-8 April 2016, University of Reading, UK. **Abstract book,** p. 26. 15. Semenova I.G. Agricultural perspectives for Steppe area of Ukraine in a changing arid climate // The 33rd International Geographical Congress, 21-25 August 2016, Beijing, China. **Abstract book.** P. 350.
Inna Khomenko	PhD (Geography), Associate Professor of the Department of Meteorology and Climatology. Key specialist in Dynamic Meteorology, Boundary Layer Meteorology, Meteorological Disasters, and Regional Aspects of Climate Changes. Has experience in implementation of the international projects 'A network for the integration of climate knowledge into policy and planning – OrientGate', INTRA-5100828 (the South East Europe Transnational Cooperation Programme, 2012-2014), 159352-TEMPUS-FI-TEMPUS-JPHES and 511390-TEMPUS-1-2010-1-SK-TEMPUS-JPCR. In 2016 completed the WMO Online Course for Trainers of the CIS

	conducted jointly with WMO RTC in the RF (ATI of Roshydromet, Moscow) with extensive coverage of the competencies established in the WMO Technical Regulations. In 2018 took a part in the summer school "The Precautionary Principle in Sustainability Transitions: Thinking forwards, Looking backwards, Acting", held in Budapest, Hungary. An author of 45 published scientific and methodological papers, including 3 monographs, a tutorial and 2 lecture summaries. Main publications in the project topic for the recent years: 1. Khomenko I.A., 2018: Conditions and mechanisms for formation of freezing precipitation and atmospheric icing and rime- and glaze-ice accretion over the Ukraine. TES Press. Odessa. 107 p. 2. Khomenko I., 2017: Effects of Future Climate Change on Transportation Industry of Ukraine. Sustainable Development. International Journal. VII. 1/2017. Bulgaria. P. 47-52. 3. Khomenko, I.A., 2017: Assessing the vulnerability of the transportation industry of Ukraine to future climate change. Preprints. European Geosciences Union, Vienna, Austria, 23-28 April 2017. 4. Shakirzanova, J.R., Khomenko, I.A., Moniushko, M.M., Sviderska, S.M., Timofeeva, L.O., 2017: Advanced Training of Lecturers within the Framework of WMO Courses. Quality Management for Training of the Specialists. All-Ukrainian scientific-and-methodical conference, 21–22 February 2017, Odessa, Ukraine, pp. 86-87. (Uk). 5. Khomenko, I.A., Dereviaha, O.O., 2016: Heat Wave Event Dynamics over the Territory of Ukraine in the Context of the Global Climate Change. Preprints. European Geosciences Union, Vienna, Austria, 17-22 April 2016. 6. Khomenko, I.A., 2015: Meteorological Conditions of Formation of Various Types of Icing Accretion in the Ukraine. Physical Geography and Geomorphology, Vol. 4 (80), Part II, p. 122-128. (Uk). 7. Sobchenko, A.Yu., Khomenko, I.A., 2015: Assessment of Regional Wind Energy Resources over the Ukraine. Energy Procedia 76: 156-163. August 2015. 8. Stepanenko, S.M., Khomenko, I.A., 2015: Statistical Characteristics of Atmospheric Icing over Territory of Ukraine. In: Climate Change and Its Impact on Economic Sectors of Ukraine: Monograph (team of authors: Stepanenko, S.M., Polovyi, A.M., Loboda, N.S., et al.; ed. by S.M. Stepanenko, A.M. Polovyi). 'TES', Odesa, p. 49-71. (Uk).
Halyna Liashenko	DSc (Geography), Professor of the Department of Agrometeorology and Agroecology. Key specialist in assessment of agroclimatic resources of territories, multi-various agroclimatic zoning and mapping of agroclimatic resources using GIS-technologies, agroclimatic assessment of productivity of agricultural crops. Author of over 150 scientific papers, including 4 monographs, 4 tutorials and 12 guidelines for bachelor and master of science students. Under her leadership 5 PhD thesis were defended, groups of MSc and PhD students have been working. Participated in the international projects 561975-EPP-1-2015-1-FI-EPPKA2-CBHE-JP and the international projects 561975-EPP-1-2015-1-FI-EPPKA2-CBHE-JP. Main publications for the recent years: 1. Liashenko G.V., 2018. Assessment of agroclimatic conditions of the territories. Monograph Viticulture. Odesa, Astroprint Pres, 55 p. (Ru). 2. Lyashenko G., Kuznietsova Ju., 2017. The Influence of agrometeorological conditions on the processes of photosynthesis in conditions of the South of Ukraine //International Journal of Research In Earth & Environmental Sciences. Vol. 10. No.1. P.1-7 (En). 3. Liashenko G.V., Soborova O.M., 2017. Simulation of forming of quality of technical grade grapes influenced by agrometeorological conditions in the northern Black Sea coast. Physical Geography and Geomorphology, Vol. 1 (85), pp.113-121 (Uk). 4. Liashenko G.V., 2016. Current problems of assessment of agroclimatic resources and zoning. Textbook. Odessa. Tes Pres. 120 p. (Uk) 5. Liashenko G.V., Soborova O.M., Lyashenko V.O., 2016. Agroecological model of formation of grape quality. Physical Geography and Geomorphology, Vol. 2 (82), pp. 110-117 (Uk). 6. Liashenko G.V., Melnik E.B., Suzdalova V.I., Marinin E.I., 2015. Drought

	tendency in Odessa central regions for the last 70 years // Viticulture and winemaking. Vol.52. pp.122-126 (Uk). 7. Lyashenko G.V., Marinin E.I., 2015. Assessment of possible risks of damage of grapes by frosts in connection with global climate change on the example of the territory of the North-Western region of the Black Sea // Horticultură, viticultură şi vinificaţie, Silvicultură şi grădini publice, Protecţia plantelor : materialele Simpozionului Ştiinţific Internaţional "Horticultura modernă – realizări şi perspective". 2015. Vol. 42(2). P.130-133. 8. Liashenko G.V., Marinin E.I., Zhygailo T.S., 2015. Impact of climate changes on the productivity of grape in Ukraine // Monograph. Climate change and their impact on the spheres of the economy of Ukraine. Odessa: TES Pres, pp. 435-450 (Uk). 9. Liashenko G.V., Danilova N.V., 2014. Practical Course in Microclimatology. Textbook. Odessa, TES Pres. 220 p. (Uk) Liashenko G.V., 2014. Practical Course in Agroclimatology. Textbook. Odessa, TES Pres. 150 p. (Uk). 10. Lyashenko G.V., Marinin E.I., 2014. Agroclimatic assessment of risks of damage the Ovidiopol and Lanka grapes by means of spring frosts. Bulletin of the Odessa National University, Vol. 19, № 4(23), Geographical and Geological Sciences, pp. 48-54 (Ru) Liashenko G.V., 2014. Methodology aspects of agroclimatic zoning of territories with heterogeneous underlying surface. Ukraïns′kij gìdrometeorologìčnij žurnal, №15. p. 85-91 (Uk).
Nataliia Loboda	DSc (Geography), Professor, Head of the Department of Hydroecology and Water Research. Main directions of research: mathematical modelling of runoff under conditions of water-management transformations and the global climate change. Provides guidance for post-graduate (9 PhD defended theses) and MSc students. In 2007 was awarded a Petro Mohyla honorary decoration 'For development of the higher education' by the MES of Ukraine, certificate #551. She was an expert in the project ESP.NUKR.EV.982416 on 'Hydrology and Ecology of Steppe Rivers in Eastern Europe' supported by NATO grant, 2006). In 2011–2014 she took part in the FP7 Environment theme "Integrated water resources and management of coastal zone management in European lagoons in the context of climate change - LAGOONS", ENV.2011.2.1.1-1. With her active participation, educational standards and curricula for the specialization of Hydroecology were developed and implemented for multilevel educational systems. Author and co-author of more than 300 published scientific and methodological papers, including 6 monographs, 1 textbook, 2 tutorials and 4 lecture summaries. The main publications in the project theme for the last 5 years: 1. Loboda, N.S., Tuchkovenko, Yu.S., Grib, O.M., 2017: Integrated Water Resources Management for the Kuialnyk Basin and its Hydroecological State under the Economic Activity and Climate Change. In: Abstracts of the International Scientific and Practical Conference, 21-23 September 2017, Zaporizhia, pp. 124-125. (Uk) 2. Tuchkovenko, O.A., Tuchkovenko, Yu.S., Loboda, N.S., 2017: Assessment of the Climate Change Impact on the Hydroecological Conditions in the Tylihul Liman Lagoon in the 21st Century. In: Collection of Scientific Papers of the 6th All-Ukrainian Congress of Ecologists with international participation supported by the Vinnytsia City Council, Ecology - 2017, 20-22 September 2017, VNTU, Vinnytsia, pp. 152. (Uk) 3. Tuchkovenko, Yu., Loboda, N., Gryb, O., 2016: Results of the Use of Modern Innovative Methods and technologies of geographic research in Solving Regional Hydroecological Problems at the Estuaries of the Northwest Black Sea Coast by Scientists of Odessa State Environmental University. In: Ukrainian Geography: Modern Challenges. Collection of Scientific Papers, Print-Service, Kyiv, Vol. 3, PP. 211-213. (Uk) 4. Loboda, N., Bozhok, Y., 2016: Climate Change and the Changes in Water Resources of Ukraine by the Global Warming Scenarios of RCP4.5 and RCP8.5. In: Ukrainian Geography: Modern Challenges. Collection of Scientific Papers, Print-Service, Kyiv, Vol. 3, PP. 89-91. (Uk) 5. Y. Tuchkovenko, N. Loboda and V. Khokhlov, 2016: The physio-geographical backgroundand ecology of Tyligulskyi Liman Lagoon. In: Coastal Lagoons in Europe. Integrated Water Resource Strategies. Edited by Ana I. Lillebo, Per Stalnacke and Geoffrey D. Gooch. IWA Publishing, P. 77-87.

	6. Hopchenko, Ye.D, Loboda, N.S., Ed., 2015: Water Regime and Hydroecological Characteristics of the Kuyalnik Estuary Basin: a Monograph. Odessa State Environmental University, TES, Odessa. (Uk) 7. Loboda N., Bozhok Y., 2015: Impact of Climate Change on Water Resources of North-Western Black Sea Region. International Journal of Research in Earth and Environmental Sciences, Vol. 02, No. 9, P. 1-6.

Partner number		**P5**
Organisation name & acronym	Kyiv National University of Construction and Architecture (KNUCA)	

F.3.1 - Aims and activities of the organisation

Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Founded in 1930, KNUCA has seven faculties, 51 departments and consists of five separate structural units in four cities and 13 test centers and laboratories in leading Ukrainian scientific schools. The development and achievements of KNUBA are aimed at activities in the field of architectural design, design of architectural environment, reconstruction and restoration of architectural objects, improvement of construction quality, new modern building materials, development of new technologies, technological processes equipment and machinery, implementation and use of technologies for ecology security and environmental protection, rational use of natural resources and energy saving, Earth science, geosystems and technologies and much more.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	59
Number of students	10000
Number of Bachelor degrees offered	45
Number of Master degrees offered	50
Number of PhD degrees offered	10
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	HORIZON 2020 program (EU Research and Innovation Program, "Accelerating the Adoption of Nanotechnology, Progressive Materials or Progressive Manufacturing or Processing Technologies for Small Businesses") to expand the scope of alkaline binders and materials. Erasmus + Ka2 "GameHub cooperation between universities-enterprises in the gaming industry of Ukraine" (Capacity Building in Higher Education 56128-EPP-1-2015-1-ES-EPPKA2-CBHE-JP.

F.3.2 – Role of your organisation in the project

Please describe also the role of your organisation in the project (limit 1000 characters).

P5 will be involved in the development of the educational system as repositories of valuable practical knowledge for building a training system focused on the needs of end-users of climate information and climate services in building sector. P5 will participate in elaboration of courses on climate services training, courses on Climate change and the building sector.
It will also host the monitoring visits by the Coordinator.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*

Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	Climatology, foundation for climate services. Climate service training. Climate change services. Climate change and adaptation. Climate change and the building sector.

For each course please fill the following nested table:

Title	**Climatology, foundation for climate services**
Level of study	master's (second level)
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge (2). The international and regional climate programs (2). Information needs for end-users in various economic sectors (2). Observations and data quality (2). Different data formats that a climate service can use and manage (2). Database management system (2). Model, scenario and data uncertainties of climate projections and seasonal forecasts (5). Statistical downscaling, bias correction and other processing tools (4). Usage of socio-economic data (3). Socio-economic benefits of Climate Services (3).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	Intership/subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climate change services**
Level of study	master's (second level)
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system and their components (2). Observations and data quality (1). Different data formats that a climate service can use and manage (1). Introduction in climate change (2). Climate Change Impacts (2). Modelling the climate system (4). Climate risk and vulnerability assessments (3). Coupling the economy and the climate (3). Usage of socio-economic data (2). Climate Policy (3). Mitigation and adaptation strategies in different sectors, including land and bioenergy, cities and transport, power generation and geoengineering (5).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6

Internship /placements (if applicable)	intership/ subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climate Change and Adaptation**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Basic Climate Change Science: Global Warming, Greenhouse Gases and Consequences. Climate Change Scenarios, Responses to Climate Change – Mitigation and Adaptation and Justice. Impacts of Climate Change. Vulnerability to Climate Change. Linkage between Climate Change and Disaster. Adaptation to Climate Change. Link between Adaptation to Climate change and Development. Methods and Tools: Impacts, Vulnerability and Adaptation. Total number of credits ia 6
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	8
Internship /placements (if applicable)	subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate Services Training**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge. The international and regional climate programs. The tasks and missions of a national center for climatology. Meteorological observations and data quality. Data acquisition. Data management tools. Data control. Data generation Information needs for decision makers in various sectors. Coupling the economy and the climate. Usage of socio-economic data. Climate Policy. Total number of credits is 6.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	8
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate change and the building sector**

Level of study	training courses for experts in technical design and construction
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system. Fundamentals of climate change. Identifying and assessing climate change impacts and risks. International frameworks and National Adaptation Planning. Planning and Design Aspects of Green and Blue Infrastructures and Nature-Based Solutions for Adapting to Climate Change. Smart cities. Eco-villages. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from sectoral universities and faculty staff from OSENU and other sectoral universities of Ukraine

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	N/A

For each course please fill the following nested table:

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
% of the modernised subjects compared to total subjects included in the course	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions) Please fill in if you are applying for this type of project and define clear the activities to be held in your institution* (limit 2000 characters)

N/A

Provide information on (if applicable)	
List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A
Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A
Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution (limit 2000 characters)

Educational system providing courses in the climate change and related aspects for experts in technical design and construction will be contribute to Sustainable Development Goal 9 – Industry, innovation and infrastructure. The experts in technical design and construction will being able to adapt building areas to adverse impacts of climate change and reduce urban climate change vulnerability. On the another hands, climate service specialists having the necessary competencies in technical design and construction will having knowledge of build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	Courses for different levels of LLL in the field of Climate Service Courses in climate change and the related aspects for experts in climate-dependent economic sectors, policy- and decision-makers The virtual research-and-education platform "Climate services"
How will the impact of these results be measured in your HEI?	Reports on the quality assessment of the TRNG programmes. The certified DL courses available online. Climate Service Platform Guidelines is implemented.
What financial means and human and other resources will be provided to sustain these results after the project ends?	Phased implementation of all of the work packages and introduction of the deliverables will initiate several interconnected self-sustained cycles (virtuous circles), which will ensure persistently improved quality of the project outcomes/outputs, stimulate collaboration between climate-dependent economic sectors and stakeholders, guarantee cost-effectiveness and sustainability of education and training. Implementation of general and specialized climate services in the National Hydrometeorological Services will form several

	external virtuous circles covering all climate-dependent economic sectors and all levels of the society's functioning and internal virtuous circles are determined by interaction of the academic institutions with sectoral Universities and climate-dependent economic sectors.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
OLENA VOLOSHKINA	Dr. Tech. Sc., Professor, head of the Labor and Environmental Protection Department of KNUCA Kiev, Ukraine. 1. The Role of "Green Structures" in Reducing the Environmental Footprint of Urbocenoses. Tetiana Tkachenko, Olena Voloshkina/ International Journal of Engineering &Technology, 7(4.8) (**2018**),214-220. https://www.sciencepubco.com/index.php/ijet/issue/view/452 2. Risk of atmospheric air pollution by formaldehyde in urban areas from motor venicles. Olena Voloshkina, Rostyslav Sipakov,Tetiana Tkachenko, Olena Zhukova/ International May Conference on Strategic Management.Volume XV, Issue (1) (**2019**) p.302-310 http://mksm.sjm06.com/. (***WoS***)
TATIANA KRYVOMAZ	Dr. Tech. Sc., Professor of the Labor and Environmental Protection Department of KNUCA Kiev, Ukraine. 1. Kryvomaz T.I., Stephenson S.L. (2017) Preliminary evaluation of the possible impact of climate change on Myxomycetes // Nova Hedwigia. – 2017.- https://www.schweizerbart.de/journals/nova_hedwigia 2. Kryvomaz T.I., Stephenson S.L. (2017) Preliminary evaluation of the possible impact of climate change on Myxomycetes // Nova Hedwigia. – 2017.- https://www.schweizerbart.de/journals/nova_hedwigia
TETIANA TKACHENKO	Dr. Tech. Sc., Professor of the Labor and Environmental Protection Department of KNUCA Kiev, Ukraine. 1. Tkachenko T. Creation of energy efficient «green construction» in conditions of moderately continental climate // Екологічна безпека та природокористування. – № 2 (26). – Київ: КНУБА, 2018. – С.77 -84.

Partner number		**P6**
Organisation name & acronym	O. M. Beketov National University of Urban Economy in Kharkiv (O.M. Beketov NUUEK)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

O. M. Beketov NUUEK, est. in 1922, is a unique higher education institution of Ukraine with study programmes and research addressing exclusively all aspects of urban functioning - Urban Development and Planning, Architecture, Urban Environmental Engineering and Management, Municipal Economy and Management, Urban Transportation, Power Supply Engineering, Tourism and Hospitality Management. The university includes 7 faculties, 3 educational centres, 2 Colleges (Municipal Economy and Electrotechnics and Mechanics) and the Lyceum. There are totally ca. 10000 students studying at the university on more than 50 Bachelors and ca. 40 Masters' degree programmes. The university offers also 14 Doctoral study programmes and various post-diploma training in Municipal and Regional Economics, Transport Systems and Logistics, Electrical and Power Supply Engineering, Urban and Regional Planning, Architecture, Municipal Governance and Environmental Safety. O. M. Beketov NUUEK is hosting biennial Inter-

regional Conference "Sustainable Development of Cities and Regions". Principal employers for O. M. Beketov NUUEK's graduates are regional state-owned and private industries, research & development institutes, municipalities and governmental agencies responsible for environmental monitoring, protection and management, regional social and economic development. One of the goals of O. M. Beketov NUUEK's strategic development is to establish a mechanism for cooperation with business, industry, and ensure the relevance of the curricula to the labour market requirements. O. M. Beketov NUUEK has always been a pioneer in launching educational reforms and applying innovative education methods.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	25
Number of students	9525
Number of Bachelor degrees offered	6200
Number of Master degrees offered	3250
Number of PhD degrees offered	75
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	Yes ERASMUS+ KA2 CBHE Joint Project "Master in SMArt transport and LOGistics fro Cities" (SMALOG) (Ref.No.: 585832-EPP-1-2017-1-IT-EPPKA2-CBHE-JP) Transport Systems (120 ECTS/2years): - Passenger Transportation - Freight transportation - Traffic Flows - Smart Transport

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

P6 will be involved in the development of the educational system as repositories of valuable practical knowledge for building a training system focused on the needs of end-users of climate information and climate services in municipal sector. P6 will participate in elaboration of courses on climate services training and courses on Impacts of Climate Change on Urban Areas and Nature-Based Solutions for Adaptation. And also P6 will take part in elaboration of courses for development of ICT competencies for specialists in climate services.
It will also host the monitoring visits by the Coordinator.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	Climatology, foundation for climate services. Climate service training. Climate change services. Climate change and adaptation. Impacts of Climate Change on Urban Areas and Nature-Based Solutions for Adaptation. Visualisation, mapping and plotting of data. Introduction to Geographic Information Systems.

For each course please fill the following nested table:

Title	**Climatology, foundation for climate services**
Level of study	master's (second level)

List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge (2). The international and regional climate programs (2). Information needs for end-users in various economic sectors (2). Observations and data quality (2). Different data formats that a climate service can use and manage (2). Database management system (2). Model, scenario and data uncertainties of climate projections and seasonal forecasts (5). Statistical downscaling, bias correction and other processing tools (4). Usage of socio-economic data (3). Socio-economic benefits of Climate Services (3).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	Intership/subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate change services**
Level of study	master's (second level)
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system and their components (2). Observations and data quality (1). Different data formats that a climate service can use and manage (1). Introduction in climate change (2). Climate Change Impacts (2). Modelling the climate system (4). Climate risk and vulnerability assessments (3). Coupling the economy and the climate (3). Usage of socio-economic data (2). Climate Policy (3). Mitigation and adaptation strategies in different sectors, including land and bioenergy, cities and transport, power generation and geoengineering (5).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	intership/ subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate Change and Adaptation**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Basic Climate Change Science: Global Warming, Greenhouse Gases and Consequences. Climate Change Scenarios, Responses to Climate Change – Mitigation and Adaptation and Justice. Impacts of

	Climate Change. Vulnerability to Climate Change. Linkage between Climate Change and Disaster. Adaptation to Climate Change. Link between Adaptation to Climate change and Development. Methods and Tools: Impacts, Vulnerability and Adaptation. Total number of credits ia 6
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	8
Internship /placements (if applicable)	subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate Services Training**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge. The international and regional climate programs. The tasks and missions of a national center for climatology. Meteorological observations and data quality. Data acquisition. Data management tools. Data control. Data generation Information needs for decision makers in various sectors. Coupling the economy and the climate. Usage of socio-economic data. Climate Policy. Total number of credits is 6.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	8
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Impacts of Climate Change on Urban Areas and Nature-Based Solutions for Adaptation**
Level of study	training courses for experts from municipal organizations
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system. General Impact and Consequences of Climate Change for Urban Areas. Methodologies for climate change impact assessment. Cities as innovators: adaptation and mitigation. Climate change adaptation possibilities using green and blue infrastructures and Nature-Based Solutions. Nature-based Solutions for Disaster Risk Reduction. Economics of Climate Mitigation and Adaptation. Collaboration with WMO and the United Nations Office for Disaster Risk Reduction.

	Case studies. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Introduction to Geographic Information Systems**
Level of study	experts in climate services
List of subjects and credits (ECTS or comparable credit system) for each of them	Definition of Geographic Information Systems (GIS). GIS software: ArcGIS, MapInfo, QGIS, Surfer. ArcGIS and QGIS interface. Data bases and their creation. Total number of credits is 2.
Estimated date of accreditation and accreditation body	September-October 2022
Estimated starting date of the new programme	November-December 2022
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	2
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Visualization, mapping and plotting of data**
Level of study	experts in climate services
List of subjects and credits (ECTS or comparable credit system) for each of them	Creation and editing of vector objects. Objects' geometry and shape. Point, linear and polygonal objects. Object topology. Elements of spatial analysis in GIS.
Estimated date of accreditation and accreditation body	September-October 2022
Estimated starting date of the new programme	November-December 2022
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	2
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	N/A

For each course please fill the following nested table:

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
% of the modernised subjects compared to total subjects included in the course	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

Provide information on (if applicable)

List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A
Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A
Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

UN Sustainable Development Goal 11 Sustainable Cities and Communities imply to make cities and human settlements inclusive, safe, resilient and sustainable. One solution to this problem to establishment of the extensive network of consulting services to be provided by specialists in specialized climate services, as well as representatives of the partner institutes promotion of the improvement of human life quality in cities. Educational system providing courses in the climate change and related aspects for general public will reducing cities environmental footprint the development of strategies for improved city management system and land-use under climate change. The experts from municipal organizations will having knowledge on adverse impacts of climate change on city systems, facilities and infrastructures, and skills to choose the optimal strategy of city adaptation under climate change, and the knowledge on measures that should be taken to protect population from climate extremes.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	Courses for different levels of LLL in the field of Climate Service Courses for development of ICT competences and skills in specialists in the field of Climate Service Courses in climate change and the related aspects for experts in climate-dependent economic sectors, policy- and decision-makers The virtual research-and-education platform "Climate services"
How will the impact of these results be measured in your HEI?	Reports on the quality assessment of the TRNG programmes. The certified DL courses and MOOCs available online. Climate Service Platform Guidelines is implemented.
What financial means and human and other resources will be provided to sustain these results after the project ends?	Phased implementation of all of the work packages and introduction of the deliverables will initiate several interconnected self-sustained cycles (virtuous circles), which will ensure persistently improved quality of the project outcomes/outputs, stimulate collaboration between climate-dependent economic sectors and stakeholders, guarantee cost-effectiveness and sustainability of education and training. Implementation of general and specialized climate services in the National Hydrometeorological Services will form several external virtuous circles covering all climate-dependent economic sectors and all levels of the society's functioning and internal virtuous circles are determined by interaction of the academic institutions with sectoral Universities and climate-dependent economic sectors.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Felix STOLBERG	Prof., D.Sc. (Engineering), Head of the Urban Environmental Engineering and Management Department. He holds a specialist degree in Civil Engineering from Kharkiv Civil Engineering Institute, PhD in Hydraulics from Moscow Civil Engineering Institute, and DSc in Environmental Engineering from the Academy of Science of the USSR. He is a Full Member of the Ukrainian Ecological Academy of Sciences, and has been a Member of Scientific & Methodological Commission for Environmental Education of the Ministry of Education and Science of Ukraine for two decades. Prof. Stolberg has written ca. 200 scientific papers, 5 monographs in the fields of Eco-technologies and Environmental Modelling with emphasis on Environmental Assessment, holds 13 patents in eco-innovation. Recent publications: 1. Vystavna Y., Yakovlev V., Diadin D., Vergeles Y., Stolberg F. Hydrochemical characteristics and water quality assessment of surface and ground waters in the

	transboundary (Russia/Ukraine) Seversky Donets basin. Environmental Earth Sciences. 2015. Vol. 74 (1). P. 585–596. 2. Vergeles Y., Vystavna Y., Ishchenko A., Rybalka I., Marchand L., Stolberg F. 2015. Assessment of treatment efficiency of constructed wetlands in East Ukraine. Ecological Engineering (2015) 83, 159-168. DOI: 10.1016/j.ecoleng.2015.06.020 3. Kozová M., Stolberg F., Vergeles Yu., Skryhan A., Eds. Environmental Governance for Cities, Municipalities and Communities : A Textbook (2014), Bratislava, Comenius University in Bratislava, 324 p.
Yuriy VERGELES	Senior Lecturer at the Department of Urban Environmental Engineering and Management. MSc degree in Biology from Kharkiv State University (now - V. N. Karazin National University of Kharkiv) and Junior Faculty Development Program certificate from the United States Informational Agency/Council of the International Exchange of Scholars, Environmental Policy Studies at the University of Texas (Austin). Research interests include Integrated Water Resources and Watershed Management, Ecological Technologies for Municipal Wastewater Treatment, Ecosystem Services, Urban Ecology. Expertise in curriculum development and projects development & management (TEMPUS, ERASMUS projects on curricular reform, university management, institutional building, EU research & development projects). Recent publications: 1. Vystavna Y., Schmidt S., Diadin D., Rossi P., Vergeles Y., Erostate M., Yermakovych I., Yakovlev V., Knoller K., Vadillo I. Multi-tracing of recharge seasonality and contamination in groundwater: a tool for urban water resource management. Water Research. 2019. 161. P. 413–422. 2. Diadin D., Vystavna Y., Vergeles Y. Quantification of nitrate fluxes to groundwater and rivers from different land use types. Hungarian Geographical Bulletin. 2018. 67 (4). P. 333–341. DOI: 10.15201/hungeobull.67.4.3 3. Vystavna Y., Diadin D., Grynenko V., Yakovlev V., Vergeles Y., Huneau F., Rossi P., Hejzlar J., Knoller K. Determination of dominant sources of nitrate contamination in a catchment with heterogeneous land use. Environmental Monitoring and Assessment. 2017. 189(10):509. DOI: 10.1007/s10661-017-6227-5 4. Vergeles Y., Vystavna Y., Ishchenko A., Rybalka I., Marchand L., Stolberg F. 2015. Assessment of treatment efficiency of constructed wetlands in East Ukraine. Ecological Engineering (2015) 83, 159-168. DOI: 10.1016/j.ecoleng.2015.06.020
Dmytro DIADIN	Senior Lecturer at the Department of Urban Environmental Engineering and Management. MSc degree in Geology from V. N. Karazin National University of Kharkiv), Ph.D. in Environmental Safety from Sumy State University (2019). Research interests include Hydrologic Cycle Alterations in Urban Areas, Hydrogeological Aspects of Environmental Safety at Oil&Gas Extraction Activities, Spatial Analysis and GIS Application to Urban Environmental Systems and Land Management. Recent publications: 1. Vystavna Y., Huneau F., Diadin D. Defining a stable water isotope framework for isotope hydrology application in a large trans-boundary watershed (Russian Federation/Ukraine). Isotopes in Environmental and Health Studies. 2018. P. 1–21. DOI: 10.1080/10256016.2017.1346635 2. Diadin D., Vystavna Y., Vergeles Y. Quantification of nitrate fluxes to groundwater and rivers from different land use types. Hungarian Geographical Bulletin. 2018. 67 (4). P. 333–341. DOI: 10.15201/hungeobull.67.4.3 3. Diadin D., Vystavna Y. Stable isotopes for estimation of urban groundwater balance in the Kharkiv city, East Ukraine. // International Symposium on Isotope Hydrology: Advancing the Understanding of Water Cycle Processes: proceedings of the symposium (Vienna, IAEA, 20–24 May 2019). 2019. Vienna, Austria 4. Vystavna Y., Diadin D., Grynenko V., Yakovlev V., Vergeles Y., Huneau F., Rossi P., Hejzlar J., Knoller K. Determination of dominant sources of nitrate contamination in a catchment with heterogeneous land use. Environmental Monitoring and Assessment. 2017. 189(10):509. DOI: 10.1007/s10661-017-6227-5

	5. Vystavna Y., Diadin D. Water scarcity and contamination in Eastern Ukraine. Proceedings of the International Association of Hydrological Sciences. 2015. Vol. 366. P. 149–150.
Olga KHANDOGINA	Senior Lecturer at the Department of Urban Environmental Engineering and Management. MSc degree in Environmental Studies from Kharkiv National Academy of Municipal Economy (now - O.M. Beketov National University of Urban Economy in Kharkiv). Research interests include Municipal Solid Waste Management, GIS Application to Urban Environmental Systems. She is experienced in curricula development for B.Sc. and M.Sc. levels of higher education. Recent publications: 1. Skryhan H., Shilova I., Khandogina O., Abashyna K., Chernikova O. Waste Management in Post-Soviet Countries: How Far from the EU? Detritus, 2018. Vol. 03. P. 193–203. DOI 10.31025/2611-4135/2018.13657 2. Khandogina O. V. Peculiarities of the Solid Waste Management Systems organization at local level. Agrosvit, 2019. No. 18. P.78-82. DOI: 10.32702/2306-6792.2019.18.72 (in Ukrainian)
Inna RYBALKA	Assistant Lecturer at the Department of Urban Environmental Engineering and Management. MSc degree in Environmental Studies from Kharkiv National Academy of Municipal Economy (now - O.M. Beketov National University of Urban Economy in Kharkiv). Research interests include Ecosystem Services of Urban Green, Ecological Modelling for Urban Forestry, Ecological Technologies Application and Assessment for Municipal Economy. Recent publications: 1. Vergeles Y., Vystavna Y., Ishchenko A., Rybalka I., Marchand L., Stolberg F. 2015. Assessment of treatment efficiency of constructed wetlands in East Ukraine. Ecological Engineering (2015) 83, 159-168. DOI: 10.1016/j.ecoleng.2015.06.020 2. Rybalka I.O. To the issue of increasing the level of ecological safety of tree stands in human settlements of Ukraine under the excessive spread of the White Mistletoe (Viscum album L.). Bulletin of Mikhail Ostrogradsky Kremenchug National University. 2017. № 102 (1). P. 111–120. (in Ukrainian) 3. Rybalka I. O., Vergeles Yu. I., Koval I. M. Effect of the White Mistletoe (Viscum album L.) on dynamics of radial increment of the Silver Maple (Acer saccharinum L.) in the Forest-Steppe zone of Ukraine. Scientific bulletin of National Forest University of Ukraine. 2012. № 22 (15). P. 57–63. (in Ukrainian)

Partner number		**P7**
Organisation name & acronym	Lviv Polytechnic National University (LPNU)	

F.3.1 - Aims and activities of the organisation

Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Lviv Polytechnic National University (LPNU) - founded in 1844 is the largest university in Western Ukraine. LPNU consists of 19 institutes including 107 academic departments, has about 36,000 students, 600 PhD candidates. The educational process is provided by a faculty of about 2200 staff members, 280 of whom are professors (holding Dr.Sc. degree) and over 1200 associate professors (holding Ph.D. degree). Since 1961 LPNU trains international students and at present there are more then 300 students from 20 countries. University is a member of the followeng international organisations: Magna Charta Universitatum; European University Association, Alliance of Universities for Democracy, Association of Carpathian Region Universities, Board of European Students of Technology; Association des Etats Généraux des Etudiants de l'Europe / European Students' Forum.Academic map of the University covers all major engineering specialties as well as sciences, languages, architecture, humanities, law etc

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	195
Number of students	362
Number of Bachelor degrees offered	198
Number of Master degrees offered	100
Number of PhD degrees offered	64
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	Master in Smart Transport and Logistics for Cities 585832-EPP-1-2017-1-IT-EPPKA2-CBHE-JP Establishing Modern Master-level Studies in Information Systems 561592-EPP-1-2015-1- FR-EPPKA2-CBHE-JP Implementation of Education Quality Assurance system via cooperation of University-Business-Government in HEIs586109-EPP-1-2017-1-RO-EPPKA2-CBHE-SP

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

P7 will be involved in the development of the educational system as repositories of valuable practical knowledge for building a training system focused on the needs of end-users of climate information and climate services in energy sector. P7 will participate in elaboration of courses on courses on climate services training and courses on Climate, Energy and Disaster Resilience.
It will also host the monitoring visits by the Coordinator.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	Climatology, foundation for climate services. Climate service training. Climate change services. Climate change and adaptation. Climate, Energy and Disaster Resilience.

For each course please fill the following nested table:

Title	**Climatology, foundation for climate services**
Level of study	master's (second level)
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge (2). The international and regional climate programs (2). Information needs for end-users in various economic sectors (2). Observations and data quality (2). Different data formats that a climate service can use and manage (2). Database management system (2). Model, scenario and data uncertainties of climate projections and seasonal forecasts (5). Statistical downscaling, bias correction and other processing tools (4). Usage of socio-economic data (3). Socio-economic benefits of

	Climate Services (3).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	Intership/subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate change services**
Level of study	master's (second level)
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system and their components (2). Observations and data quality (1). Different data formats that a climate service can use and manage (1). Introduction in climate change (2). Climate Change Impacts (2). Modelling the climate system (4). Climate risk and vulnerability assessments (3). Coupling the economy and the climate (3). Usage of socio-economic data (2). Climate Policy (3). Mitigation and adaptation strategies in different sectors, including land and bioenergy, cities and transport, power generation and geoengineering (5).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	intership/ subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate Change and Adaptation**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Basic Climate Change Science: Global Warming, Greenhouse Gases and Consequences. Climate Change Scenarios, Responses to Climate Change – Mitigation and Adaptation and Justice. Impacts of Climate Change. Vulnerability to Climate Change. Linkage between Climate Change and Disaster. Adaptation to Climate Change. Link between Adaptation to Climate change and Development. Methods and Tools: Impacts, Vulnerability and Adaptation. Total number of credits ia 6
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10

Number of teaching staff to be trained	8
Internship /placements (if applicable)	subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate Services Training**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge. The international and regional climate programs. The tasks and missions of a national center for climatology. Meteorological observations and data quality. Data acquisition. Data management tools. Data control. Data generation Information needs for decision makers in various sectors. Coupling the economy and the climate. Usage of socio-economic data. Climate Policy. Total number of credits is 6.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	8
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate, Energy and Disaster Resilience**
Level of study	training courses for experts in energy sectors
List of subjects and credits (ECTS or comparable credit system) for each of them	The fundamentals of climate change. Energy relevant changes in climate and weather. Energy sector vulnerabilities to climate change and natural disasters. International frameworks and National Adaptation Planning. Basics of adaption and mitigation in energy sector. Disaster risk reduction. Low-emission development strategies. Renewable energy technologies. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	N/A
For each course please fill the following nested table:	

Title	**N/A**
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
% of the modernised subjects compared to total subjects included in the course	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

Provide information on (if applicable)

List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A
Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A
Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

The development of strategy of reducing energy sector vulnerability to climate changes will be to achieving one of the UN sustainable development goals No7 Grow Affordable and Clean Energy. One way to achieve this is establishment of the extensive network of consulting services there to be provided by staff of the partner institutes for providing courses in the climate change and related aspects for experts in energy sector.As a resalt the society will receive the climate service specialists having the necessary energy industry competencies, and experts in energy sector having the necessary competencies in climatology and climate services.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	Courses for different levels of LLL in the field of Climate Service Courses in climate change and the related aspects for experts in climate-dependent economic sectors, policy- and decision-makers The virtual research-and-education platform "Climate services"
How will the impact of these results be measured in your HEI?	Reports on the quality assessment of the TRNG programmes. The certified DL courses and MOOCs available online. Climate Service Platform Guidelines is implemented.
What financial means and human and other resources will be provided to sustain these results after the project ends?	Phased implementation of all of the work packages and introduction of the deliverables will initiate several interconnected self-sustained cycles (virtuous circles), which will ensure persistently improved quality of the project outcomes/outputs, stimulate collaboration between climate-dependent economic sectors and stakeholders, guarantee cost-effectiveness and sustainability of education and training. Implementation of general and specialized climate services in the National Hydrometeorological Services will form several external virtuous circles covering all climate-dependent economic sectors and all levels of the society's functioning and internal virtuous circles are determined by interaction of the academic institutions with sectoral Universities and climate-dependent economic sectors.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Myroslav Malovanyy	Department of Ecology and Sustainable Environmental Management was founded in 2002. Head of department – DSc, Prof. Myroslav Malovanyy. Academic staff includes 3 DSc and 17 PhD. Department has partnership with more than 30 departments of Ukrainian, Polish, Sweden, Bulgarian and Russian Universities. In The Department of Ecology and Sustainable Environmental Management the following scientific research directions are studied: application of natural dispersed sorbents in environment protection technologies, purification of surface waters from crude oil pollution using adsorption methods, adsorption processes of effluent purification from organic solvents, wastewater purification from dyes using adsorption on natural dispersed sorbents, environmental risk assessment of polluted environment, environmental impact assessment of hydrodynamic production, environmental safety of non-waste technologies of processing of multicompound saline materials, environmental safety of food production (wastewater purification, wastes utilisation), impact assessment of mineral fertilizers on natural environmental, technologies of film encapsulation of mineral fertilizers based on polymeric materials

	and natural dispersed sorbents, utilisation of industrial wastes from wood treatment with biofuel production, purification of drainage waters of municipal solid wastes land fields. On such topics more than 300 scientific papers were published and 24 patents received. Also 6 agreement works have been accomplished. List of publication. 1. Myroslav Malovanyy, Natalia Kononenko, Olga Demina, Kateryna Petrushka Impact from Counterion Nature on Current Transfer Through Structural Fragments of Sulphocationic Resin //Journal of Ecological Engineering, 2019, V20, №3.-P. 7-12. https://doi.org/10.12911/22998993/96321 2. Myroslav Malovanyy, Oleksandr Moroz, Svitlana Hnatush, Olga Maslovska, Volodymyr Zhuk, Ihor Petrushka, Volodymyr Nykyforov, Andriy Sereda Perspective Technologies of the Treatment of the Wastewaters with High Content of Organic Pollutants and Ammoniacal Nitrogen//Journal of Ecological Engineering, 2019, V20, №2.-P. 8-15. https://doi.org/10.12911/22998993/94917 3. Halyna Sakalova, Myroslav Malovanyy, Tamara Vasylinych, Rostyslav Kryklyvyi The Research of Ammonium Concentrations in City Stocks and Further Sedimentation of Ion-Exchange Concentrate//Journal of Ecological Engineering, 2019, V20, №1.-P.158-164. https://doi.org/10.12911/22998993/93944 4. *Malovanyy M., Zhuk V., Sliusar V., Sereda A.* Two stage treatment of solid waste leachates in aerated lagoons and at municipal wastewater treatment plants//Eastern-European Journal of Enterprise Technologies .- 2018, - № 1(10). - P.23 - 30. doi.org/10.15587/1729-4061.2018.122425 5. Tulaydan, Y., Malovanyy, M., Kochubei, V., Sakalova, H Treatment of high-strength wastewater from ammonium and phosphate ions with the obtaining of struvite // Chemistry & Chemical Technology. – 2017. – Vol.11, №4. – P.463-468. doi.org/10.23939/chcht11.04.463
Volodymyr Zhuk	Volodymyr Zhuk, PhD, Assoc. Prof. of the Department of Hydraulic and Water Engineering of the Institute of Civil Engineering and Building Systems. Author and coauthor of more than 150 scientific papers, more than 30 methodological papers and 3 patents. He was a supervisor for 4 PhD thesis. V. Zhuk participated as scientific expert in 4 international grant programs in field of water supply and water runoff, implemented in 2007−2015, also in project "Biogas production on sewage effluents purification structures – support program of Lviv city" (2015), financed by Ministry of foreign affairs of Republic of Poland. In 2008−2010 administered Environmental Engineering and Water Management Centre, established in Lviv Polytechnic National University together with Company Joca Ingenieria y Construcciones, S.A. (Spain). List of publication. 1. Tkachuk S.G., Zhuk V.M. Stormwater management in the sewerage systems: monography. – Lviv: Lviv Polytechnic Publication, 2012. – 216. 2. Zhuk V.M. Impact from configuration of small urban catchments on the stormwater hydrographs // Motrol. Commission of Motorization and Energetics in Agriculture. – 2015, 17 (6), 111−117. 3. Malovanyy M., Zhuk V., Oducha M., Sliusar V., Sereda A. Technological aspects of the pre-treatment of leachate, stored at the retention ponds of the Grybovychi landfill, Lviv region, Ukraine // Water Security: Monograph. – Mykolaiv: PMBSNU – Bristol: UWE, 2016, 88−97. 4. Łukasik Z., Czaban A., Szafraniec A., Żuk V. The mathematical model of the drive system with asynchronous motor and vertical pump // Przegląd Elektrotechniczny. − 2018. − R. 94 NR 1/2018. − P. 133−138. doi:10.15199/48.2018.01.34

	5. Zhuk V. Statistical method for determining the distribution of surfaces by type of coverage on large urbanized drainage basins // Instal. − 2018. − 3(393). – p. 45–48. 6. Mysak I.V., Zhuk V.M. Changes in rainfall parameters in the Lviv city from 1945 to 2018 // Natural Waters Recourses of Carpathian Region / Problems of health and rational management. Proceedings of the 18th international scientific and practical conference (Lviv, 23–24 May, 2019). – Lviv: LPNU, 2019, 19–22.
Orest Mukha	Orest Mukha senior specialist of the Department of Ecology and Sustainable Environmental. Experience in managing and participated in the projects. List of the projects: - 2016-2018 –Departrment coordinator, Erasmus +, Key action 1, Mobility for learners and staff - 2014-TREC Danube - Transnational Renewable Energy Cluster Danube, http://www.trec-network.eu/ - 2014-Efficiency of using biomass for energy purposes, Poland, Project, - 2013 -"UKR 10/040"Biogas production through anaerobic digestion of chicken manure in in Ukraine", Joint Ukraine- Germany R&D projects - 2011- Project "1CEO13P3" "Strengthening the energetic use of biomass in Central and Eastern Europe by establishing a standardised transnational consulting net for regions"/"COACH BioEnergy", Interreg Programme. - http://www.trec-network.eu/lviv-state-centre-of-science-innovations-and-informatization.html - 6..2014, Project BRISK, 7 Framework Programme, Gasification: a versatile technology converting biomass to produce synfuels, heat and power. List of publication. 1. 1.Barz, M., Malovanyy M.,Voytovych I., Kabengele G., Mukha O., Tymchuk I., Zhuk V. 2. Perspektives of implementation in Ukraine of the biogas plants working on combined organig raw materials //10th international scientific conference "Renewable energy sources as alternative to primary energy sources in region" 4- 5 April, 2019. Lviv. collected materials – pp. 69-70. 3. Ohirko I, Mukha O. Information technology of integration studies of natural waters// 18 th Natural Waters in Carpathian Region, 23-24 May 2019, Lviv, collected materials –54-60 pp. 4. S. Lys, O. Mukha. Research of NPP Water, Chenical Regime // 17 th Natural Waters in Carpathian Region, 24 -25 May 2018,Lviv, collected materials- 305-308 pp. 5. Posibilities of implementation the anaerobic digestion of sewage sludge at different wastewater treatment plants I.G. Voytovych, O.V. Mukha, V.M. Zhuk, M.S. Odukha //16 th Natural Waters in Carpathian Region, 25 -26 May 2017, Lviv collected materials –154-157 pp. 6. 5. O.M. Mukha, Ya.M. Hnatyshyn., V.S Grodzyk. Research of parametrs of bioreactor on computer// 8th international scientific conference "Renewable energy sources as alternative to primary energy sources in region" 2- 3 April, 2015, Lviv. collected materials – pp. 141-144.

Partner number		**P8**
Organisation name & acronym	Bila Tserkva national agrarian university (BTNAU)	

F.3.1 - Aims and activities of the organisation

Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

The Bila Tserkva National Agrarian University is a powerful research and education centre with the history dating back to 1630. 6 faculties of the University offer education in agronomy, land resources management, forestry, geodesy, economics, veterinary medicine, bio-technology, ecology and water resources, law, linguistics and post diploma training. The University hosts 5 research institutes, 13 research laboratories, Institute of post diploma education for managers and specialists in veterinary medicine, Institute of European Integration, Education and Research Institute of Economics and Business, 8 colleges, research establishments and production enterprises. The total number of students is about 7000. The teaching staff consists of 12 academicians, 54 doctors of sciences, professors, 257 candidates of sciences, 13 Honoured Scientists of Ukraine. The University researchers work on development of highly efficient production technologies for cereals, fodder crops, potatoes. They draft and produce preparations for animal diseases prevention and treatment, and work on problems of animal reproduction. The scientists took part in elaboration of the Land Code of Ukraine, the projects of profitable use of land and water resources and other laws of Ukraine. The University cooperates with many enterprises for practical training of students, research and consultancy. There is a department for cooperation with industries and employment of the graduates. The Institute of Continuing Education in the structure of the University provides training and professional development of managers and specialists of veterinary medicine, as well as agriculture experts, chiefs and technician personal of laboratories that control the safety and quality of foodstuffs in different regions of Ukraine. Annually over a thousand trainees are trained at the Institute. There is a law clinic at the University, in which students, under the guidance of teachers, free of charge advise the city's population on various legal issues, including those relating to the protection of consumers' rights, agrarian, environmental law etc. The University's Training farm provides student's training and research but also agricultural production – produces milk and poultry meat, fish in ponds, cereals and other crops.

The University participated in 6 EU Tempus projects and in the EU FP7 project, 2 Erasmus+ KA2 projects and several KA1 projects.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	86
Number of students	5842
Number of Bachelor degrees offered	19
Number of Master degrees offered	19
Number of PhD degrees offered	7
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	1. *Improving skills in laboratory practice for agro-food specialists in eastern Europe» (Ag-Lab) 586383-EPP-1-2017-1-SI-EPPKA2-CBHE-JP (2017-2978/001-001)* A Master course was developed titled "Laboratory works" consisting of 4 main disciplines: Hygiene of food staff, Laboratory diagnostics of infectious diseases, Chemical and toxicological methods of diseases diagnostics, Veterinary helminthology. 2. *Enhancing capacity of universities to initiate and to participate in clusters development on innovation and sustainability principles (UniClaD) 609944-EPP-1-2019-1-LT-EPPKA2-CBHE-JP*

F.3.2 – Role of your organisation in the project

Please describe also the role of your organisation in the project (limit 1000 characters).

P8 will be involved in the development of the educational system as repositories of valuable practical knowledge for building a training system focused on the needs of end-users of climate information and climate services in agriculture. P8 will participate in elaboration of courses on courses on climate services training and courses on Climate Smart Agriculture. And also P8 will take part in elaboration of courses for development of socio-economic competencies for specialists in climate services.

P8 will host the training sessions in the field of Climate Service in various economic sectors for the faculty staff of sectoral universities.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	Climatology, foundation for climate services. Climate service training. Climate change services. Climate change and adaptation. Climate Smart Agriculture. Improvement to Communication Skills. Introduction to Economics: Basic Concepts and Principles Content.

For each course please fill the following nested table:

Title	**Climatology, foundation for climate services**
Level of study	master's (second level)
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge (2). The international and regional climate programs (2). Information needs for end-users in various economic sectors (2). Observations and data quality (2). Different data formats that a climate service can use and manage (2). Database management system (2). Model, scenario and data uncertainties of climate projections and seasonal forecasts (5). Statistical downscaling, bias correction and other processing tools (4). Usage of socio-economic data (3). Socio-economic benefits of Climate Services (3).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	Intership/subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate change services**
Level of study	master's (second level)
List of subjects and credits (ECTS or comparable	The climate system and their components (2).

credit system) for each of them	Observations and data quality (1). Different data formats that a climate service can use and manage (1). Introduction in climate change (2). Climate Change Impacts (2). Modelling the climate system (4). Climate risk and vulnerability assessments (3). Coupling the economy and the climate (3). Usage of socio-economic data (2). Climate Policy (3). Mitigation and adaptation strategies in different sectors, including land and bioenergy, cities and transport, power generation and geoengineering (5).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	intership/ subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climate Change and Adaptation**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Basic Climate Change Science: Global Warming, Greenhouse Gases and Consequences. Climate Change Scenarios, Responses to Climate Change – Mitigation and Adaptation and Justice. Impacts of Climate Change. Vulnerability to Climate Change. Linkage between Climate Change and Disaster. Adaptation to Climate Change. Link between Adaptation to Climate change and Development. Methods and Tools: Impacts, Vulnerability and Adaptation. Total number of credits ia 6
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	8
Internship /placements (if applicable)	subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate Services Training**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge. The international and regional climate programs. The tasks and missions of a national center for climatology. Meteorological observations and data quality. Data acquisition. Data management tools. Data control. Data generation Information needs for decision makers in various sectors. Coupling the economy and the climate. Usage of

	socio-economic data. Climate Policy. Total number of credits is 6.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	8
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate Smart Agriculture**
Level of study	training courses for experts in agriculturre
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system. Causes of climate change. Impacts of agriculture on climate change. Impacts of climate change on agriculture and food security. Application of climate data in management and planning. Economics of climate change. Basics of adaption and mitigation in the agricultural sectors. Methodologies for climate change impact assessment. International frameworks and National Adaptation Planning. Case studies. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Main PC, 14 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Improvement to Communication Skills**
Level of study	experts in climate services
List of subjects and credits (ECTS or comparable credit system) for each of them	Learn to Listen. Studying and Understanding Non-Verbal Communication. Emotional Awareness and Management. Questioning Skills. Effective Transmitting Massangers. Power of strong communication skills in the Workplace. Total number of credits is 2.
Estimated date of accreditation and accreditation body	September-October 2022
Estimated starting date of the new programme	November-December 2022
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	2
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Introduction to Economics: Basic Concepts and Principles Content**
Level of study	experts in climate services
List of subjects and credits (ECTS or comparable credit system) for each of them	What is Economics? Demand & Supply. Free market hypothesis. Cost, efficiency and scarcity. Introduction to Microeconomics. Introduction to Macroeconomics. Game Theory in Economics. Price Elasticity of Demand. Total number of credits is 2.
Estimated date of accreditation and accreditation body	September-October 2022
Estimated starting date of the new programme	November-December 2022
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	2
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	N/A
For each course please fill the following nested table:	

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
% of the modernised subjects compared to total subjects included in the course	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions) Please fill in if you are applying for this type of project and define clear the activities to be held in your institution* (limit 2000 characters)

N/A

Provide information on (if applicable)	
List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A
Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A
Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*

Please fill in if you are applying for this type of project and define clear the activities to be held in your institution (limit 2000 characters)

Collaboration with WMO and the Food and Agriculture Organization of the United Nations and World Food Programme within the Global Campus facilitated by the Global Framework for Climate Services will have progress in achieving one of the UN sustainable development goals No2 Zero Hunger (End hunger, achieve food security and improved nutrition and promote sustainable agriculture promotion of sustainable development of the agricultural sector and rural communities). The agricultural specialists who will be experienced users of climate information and climate services both for planning and for operational purposes can the development of strategies for improved agricultural systems and land-use under climate change and constant external and internal migration.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	Courses for different levels of LLL in the field of Climate Service Courses for development of social-economic competences and skills in specialists in the field of Climate Service. Courses in climate change and the related aspects for experts in climate-dependent economic sectors, policy- and decision-makers. The virtual research-and-education platform "Climate services".
How will the impact of these results be measured in your HEI?	Reports on the quality assessment of the TRNG programmes. The certified DL courses and MOOCs available online. Climate Service Platform Guidelines is implemented.
What financial means and human and other resources will be provided to sustain these results after the project ends?	Phased implementation of all of the work packages and introduction of the deliverables will initiate several interconnected self-sustained cycles (virtuous circles), which will ensure persistently improved quality of the project outcomes/outputs, stimulate collaboration between climate-dependent economic sectors and stakeholders, guarantee cost-effectiveness and

	sustainability of education and training. Implementation of general and specialized climate services in the National Hydrometeorological Services will form several external virtuous circles covering all climate-dependent economic sectors and all levels of the society's functioning and internal virtuous circles are determined by interaction of the academic institutions with sectoral Universities and climate-dependent economic sectors.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Tetyana Dyman	DSc, Professor of the Department of Food Technology, vice-rector on Educational and International activity. Expert of Scientific-Methodical Council at Ministry of Science and Education of Ukraine, section «Agriculture, Horticulture, Veterinary Medicine», member of two Specialized Academic Councils. She is an author and co-author of more than 300 papers including 3 textbooks, 8 monographs in the field of Sustainable nutrition, Food safety, Environmental Education. Scientific supervisor of 6 PhD theses and 3 Doctoral theses. She experienced in development and modernization of study programs, curricula, teaching syllabuses in the field of Life sciences. She is an expert of National Agency of Quality Assurance. Prof. Dyman has ample experience in international cooperation – was project leader in Ukraine of EU FP7 project (2009-2012), took part in several EU Tempus and other international projects. In the frame of Tempus project (2014-2017) she participated in elaboration of Sectoral Qualifications Frameworks in Environmental Science. 1. Luescher G., Dyman T.et al. Farmland biodiversity and agricultural management on 237 farms in 13 European and 2 African regions. Ecology. – 2016. 2. Last L., Arndorfer M., Balázs K., Dennis P., Dyman T. et al. Indicators for the on-farm assessment of crop cultivar and livestock breed diversity: a survey-based participatory approach. Biodiversity and Conservation, 2014, 23 (12), 3051–3071. 3. Grynevych N., Dyman T., Kukhtyn M., Semaniuk N. Composition of psychrotrophic microflora of water and biofilter filler in recirculation aquaculture system on trout farm. Research Journal of Pharmaceutical Biological and Chemical Sciences, 2017, 8 (3), 900–905.
Olexandr Bonkovskyy	Head of Department of International relations, contact person for project administration at the BTNAU, has ample years experience in management of international education and research projects; application and interpretation of European education policy initiatives at the university level; integration of European approaches to curriculum reform through international exchanges involving academics and researchers from the EU; development and implementation of international projects (e.g. TEMPUS, FP7, DAAD) with international higher education and research institutions, Ministry of Agrarian Policy, Ministry of Education and Science of Ukraine, businesses and NGOs; initiation of international research; dissemination of best practices to Ukrainian universities 1. M. Rublenko(1) , C. Prouillac(2) , N. Vovkotrub(1) , K. Portier(2) , T. Tsarenko(1), Z. Djelouadji(2) , I. Rublenko(1) , A. Gonthier(2) , O. Khitska(1), M. Pépin(2) , V. Shaganenko(1), S. Buff(2) , L. Korniienko(1) , C. Becker(2), V. Andriyets(1) , P. Bruyère(2) , O. Bonkovskyi(1) S. Martinot(2) , A. Danylenko(1) , M. Artois(2) & A. Leblond(2)* Implementation of the OIE recommendations in Ukrainian veterinary education. Bulletin of World Organization for Animal Health, November 2018.
Nataliia Hrynevych	DSc, Head of the Department of Ichthyology and Zoology. She is an author and co-author of more than 80 papers including 10 patents. Member of the Scientific and Methodological Subcommittee on the specialty "Aquatic bioresources and aquaculture" at the Ministry of Education of Ukraine. She takes part in implementation of Erasmus+ project UniClaD (2019-2022).

	Scientific interests: Development of a system of sanitary-hygienic measures in the recirculation aquaculture systems on industrial trout farms 1. Grynevych N., Dyman T., Kukhtin M., Semanyuk N. Composition of psychrotrophic microflora of water and biofilter filler in recirculation aquaculture system on trout farm / // Research Journal of Pharmaceutical, Biological and Chemical Sciences. – 2017 May-June. – Vol. 8(3). – P.900-905 2. Grynevych N., Sliusarenko A., Dyman T. [et al.] Etiology and histopathological alterations in some body organs of juvenile rainbow trout Oncorhynchus mykiss (Walbaum, 1792) at nitrite poisoning. / // Ukrainian Journal of Ecology. – 2018. – Vol. 8(1). P. 402–408. doi: 10.15421/2018_228 3. Hubanova, N., Horchanok, A., Novitskii, R., Sapronova, V., Kuzmenko, O., Grynevych, N. et al. (2019). "Accumulation of radionuclides in Dnipro reservoir fish". Ukrainian Journal of Ecology. 9 (2), 227–231.
Lesia Karpuk	DSc, Professor of the Department of Land Farming, Agricultural Chemistry and Soil Science. Expert of Scientific-Methodical Council at Ministry of Science and Education of Ukraine, section «Agriculture, Horticulture, Veterinary Medicine», head and member of Specialized Academic Councils. She is an author and co-author of more than 150 papers including 2 textbooks, 4 monographs in the field of Plant growing, Sugar beet and bioenergy crops production in the unstable weather conditions of Ukraine, Agrometeorology. Scientific supervisor of 5 PhD theses. She experienced in development and modernization of study programs, curricula, teaching syllabuses in the field of Agricultural sciences. She is an expert of National Agency of Quality Assurance. Prof. Karpuk has ample experience in international cooperation – participated in several projects including Erasmus+ KA1 and KA2. In the frame of Erasmus+ KA2 she participates in development of Masters course in Soil Science. 1. Khahula, V.S., Karaulna, V.M., Bogatyr, L.V., Karpuk, L.M., Krykunova, O.V., Pavlichenko, A.A. (2018). Assessment of soil and soil trophic chains contamination by persistent organic pollutants. Ukrainian Journal of Ecology, 8(2), 42–53. https://doi: 10.15421/2018_308. 2. Doronin VA, Dryha VV, Kravchenko YA, Mykolaiko VP, Karpuk LM, Krasnoshtan IV. Growing of Miscantus Giganteus planting material in the conditions of unstable moistening. Eurasia J Biosci . 2019;13(2), 1101-1108. 3. Zhemoyda VL, Krasnovsky SA, Karpuk LM, Makarchuk OS. The algorithm selection of initial material corn by breeding for cold resistance and model of inbred line. Eurasia J Biosci. 2019;13(1), 431-436.
Nadia Bogatko	PhD in veterinary sciences, Head of Veterinary Examination Institute for postgraduate training of managers and specialists of veterinary medicine. She is a member of the Scientific and Methodological Subcommittee on the specialty "Veterinary Hygiene Sanitation and Expertise" at the Ministry of Education of Ukraine. She is a coauthor of 356 scientific and methodical publications including 24 textbooks and manuals, 4 monographs, 131 scientific articles, 98 Patents for inventions, 9 normative documents concerning food safety and state risk-oriented control of foodstuff. 1. Prylipko T., Bucalova N., Bogatko N. (2018). Improvement strategies for gorizontal methods of bacteriological study of milk: Scientific monograph. Scientific Achievements in environmental and life science, Krakow. P.34-42. 2. Prylipko T., Bukalova N., Bogatko N. (2018). Development of practical measures and ways of their realization for control, management of dairy raw materials and dairy products in accordance with eu norms. Scientific development and achievements. Volume 4. Published by Sciemcee Publishing, United Kingdom. P. 28–41. 3. Nadia M. Bogatko et al. (2019). Some indices' determination of raw and pasteurized cow milk by Ukrainian manufactures using unique express methods. Journal of Microbiology, Biotechnology and Food Sciences. Vol. 9, no. 1. Slovakia.
Nataliia Dyman	MSc, Researcher at the Faculty of Ecology. She was awarded by German Federal Environmental Foundation (DBU) grant, the title of project is "Peculiarities of working with climatic issues in youth communities as a component of the formation of ecological consciousness of youth". Scientific interests: Education for sustainable

	development. 1. Dyman N. Problems of sustainable development of tourism in Ukraine / Proc. of Scient.-pract. conf. October, 13-14.2014. NULES, Kiev, 2014. P. 26-27. 2. Dyman N.O. Food safety in the field of tourist service / Problems of formation of healthy lifestyle of youth: Proc. of Scient.-pract. conf. November, 4-5. 2014. Odesa, 2014. P. 45-46.
Tetiana Mazur	PhD in Veterinary Sciences, Assistant Professor of the Department of Ecotrophology. The author and co-author of more than 40 scientific and methodological papers in the field of food sciences, including textbook on Food safety, monograph Human nutrition. She is experienced in development and modernization of teaching syllabuses on disciplines of Food Safety, Quality management. She was co-author of various oral and poster presentations at international conferences.

Partner number		**P9**
Organisation name & acronym	Odessa National Medical University (ONMedU)	

F.3.1 - Aims and activities of the organisation

Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Odessa National Medical University (ONMedU) is one of the leading medical universities of the 4th level of accreditation, and a member of the International and European Association of Universities. 120 years since its foundation will be celebrated on 1 September 2020. Today ONMedU has an up-to-date material and technical resources, with regard to the latest achievements of medical science. On the groundwork of ONMedU, the multifield university clinics, as well as a research laboratory of molecular genetics, cell medicine and clinical biophysics have been established. There are diagnostic and treatment centres, a research park and a simulation centre. The training is provided for more than 10 thousand master and post-graduate students at seven faculties and 66 departments of ONMedU, and 4000 of them are citizens of 52 foreign countries.

One of the main indicators of the climate change impact on human health is reproductive health. The study of the peculiarities of the gestational process, abnormalities of pregnancy and childbirth, and pregnancy termination under the conditions of iatrogenic influence of particular climatogeographic components is the basis for development of measures for adaptation of the female population of Odessa and the south of Ukraine to the emerging climate change and reduction in the complications. Fundamental interdisciplinary studies and their results are planned for implementation in the educational process at ONMedU – the syllabi for students, interns, and medical course-takers at the Faculty of Postgraduate Education.

Clinical and laboratory studies are carried out on the premises of the ONMedU Department of Obstetrics and Gynaecology No. 2 in a Municipal non-profit enterprise 'Maternity Hospital No. 5' in Odessa. A retrospective analysis of pregnancy and childbirth outcomes, their abnormalities according to the history of childbirths, the clinical and laboratory study of pregnant women was performed over the past five years, and their correlation with the main climatogeographic components was studied. Among the latter, heat and cold waves, and the solar luminosity are considered to be particularly significant. Under these conditions, development of measures on the climate services for the female population to maintain the reproductive health of the female population and their introduction into the educational process in ONMedU, as one of the leading medical HEIs in Ukraine, is an effective guarantee of securing the health of future generations.

Thromboelastographic studies for pregnant women, maternity and gynaecological patients are planned in the 'Maternity Hospital No. 5' in Odessa and at the Department of Anesthesiology, Intensive Care and Emergency Medicine.

Histomorphological studies of placentas in women with habitual noncarrying of pregnancy, preterm delivery, fetal distress and obstetric bleeding are carried out at the Department of Normal and Pathological Clinical Anatomy in order to detect compensatory-adaptive or involutive-dystrophic changes under the aggressive influence of climatic factors and abnormalities of pregnancy and childbirth.

Only for Partner Country institutions, please provide information on:	
Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	45
Number of students	More then 10.000
Number of Bachelor degrees offered	1
Number of Master degrees offered	4
Number of PhD degrees offered	6
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	ONMedU collaborates in the Tempus Leadership project and within the framework of the International European Project MEDINE. The tasks of MEDINE, as an association of medical faculties and universities in Europe, are to harmonize the principles of obtaining and evaluating medical education in Europe; development of a system of international recognition of specialties in the field of medical education; introduction of standards for the quality of medical education for Europeans, etc.

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

P9 will be involved in the development of the educational system as repositories of valuable practical knowledge for building a training system focused on the needs of end-users of climate information and climate services in healthcare system. P9 will participate in elaboration of courses on courses on climate services training and Introduction to climate change and health. And also P9 will take part in elaboration of massive open on-line courses on Introduction to climate change for the general public.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	Climatology, foundation for climate services. Climate service training. Climate change services. Climate change and adaptation. Introduction to climate change and health. Introduction to climate change.

For each course please fill the following nested table:

Title	**Climatology, foundation for climate services**
Level of study	master's (second level)
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge (2). The international and regional climate programs (2). Information needs for end-users in various economic sectors (2). Observations and data quality (2). Different data formats that a climate service can use and manage (2). Database management system (2). Model, scenario and data uncertainties of climate projections and seasonal forecasts (5). Statistical downscaling, bias correction

	and other processing tools (4). Usage of socio-economic data (3). Socio-economic benefits of Climate Services (3).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	Intership/subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Main PC, 12 PC Stations for Training Classes, Network Equipment, Multimedia and Office Equipment for participation of students from other universities of Ukraine

Title	**Climate change services**
Level of study	master's (second level)
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system and their components (2). Observations and data quality (1). Different data formats that a climate service can use and manage (1). Introduction in climate change (2). Climate Change Impacts (2). Modelling the climate system (4). Climate risk and vulnerability assessments (3). Coupling the economy and the climate (3). Usage of socio-economic data (2). Climate Policy (3). Mitigation and adaptation strategies in different sectors, including land and bioenergy, cities and transport, power generation and geoengineering (5).
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	15/15
Number of teaching staff to be trained	6
Internship /placements (if applicable)	intership/ subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate Change and Adaptation**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Basic Climate Change Science: Global Warming, Greenhouse Gases and Consequences. Climate Change Scenarios, Responses to Climate Change – Mitigation and Adaptation and Justice. Impacts of Climate Change. Vulnerability to Climate Change. Linkage between Climate Change and Disaster. Adaptation to Climate Change. Link between Adaptation to Climate change and Development. Methods and Tools: Impacts, Vulnerability and Adaptation. Total number of credits ia 6
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10

Number of teaching staff to be trained	8
Internship /placements (if applicable)	subdivisions of the National Hydrometeorological Services
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Climate Services Training**
Level of study	vocational training courses
List of subjects and credits (ECTS or comparable credit system) for each of them	Climatology: its objectives, its resources, the state of knowledge. The international and regional climate programs. The tasks and missions of a national center for climatology. Meteorological observations and data quality. Data acquisition. Data management tools. Data control. Data generation Information needs for decision makers in various sectors. Coupling the economy and the climate. Usage of socio-economic data. Climate Policy. Total number of credits is 6.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	8
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Introduction to climate change and health**
Level of study	training courses for health-care experts
List of subjects and credits (ECTS or comparable credit system) for each of them	The climate system. Causes of climate change. Overview of Health Impacts of Climate Change, Adaptation, Mitigation, and Co-benefits. Methodologies for climate change impact assessment. Extreme Weather: Heat, Storms, & Floods. Water-borne Infections and Vector-borne Diseases. Collaboration with WMO and the World Health Organization. Climate-smart health care. Case studies. Total number of credits is 4.
Estimated date of accreditation and accreditation body	November-December 2022
Estimated starting date of the new programme	January – February 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	4
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Title	**Introduction to climate change**
Level of study	for the general public
List of subjects and credits (ECTS or comparable credit system) for each of them	Climate Change Impacts, Climate change mitigation and adaptation, Climate change and society, The

	Impact of Climate Change on Public Health. Total number of credits is 2.
Estimated date of accreditation and accreditation body	March-April 2023
Estimated starting date of the new programme	May-June 2023
Number of students to be accepted in the first year/ second year	10/10
Number of teaching staff to be trained	3
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	Multimedia and Office Equipment for participation of students from other universities of Ukraine and faculty staff from OSENU and other sectoral universities of Ukraine

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	N/A

For each course please fill the following nested table:

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
% of the modernised subjects compared to total subjects included in the course	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions) Please fill in if you are applying for this type of project and define clear the activities to be held in your institution* (limit 2000 characters)

N/A

Provide information on (if applicable)

List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A

Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A
Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution (limit 2000 characters)

The development of health system strategy under climate change conditions contributes to achieving one of the UN sustainable development goals No3 Establish Good Health and Well-Being. Health professionals will having knowledge on adverse impacts of climate change on human health, skills to choose the optimal strategy of development of the health-care system in the face of a constant threat of climate change, and the knowledge on measures that should be taken to reduce risks to the general public from climate extremes.Educational system providing courses for health-care workers in the climate change and related aspects will dissemination of the project results to enhance public understanding of adverse climate change effects on human health.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	Courses for different levels of LLL in the field of Climate Service Courses in climate change and the related aspects for experts in climate-dependent economic sectors, policy- and decision-makers Massive open on-line courses for enhancing climate literacy for the general public The virtual research-and-education platform "Climate services"
How will the impact of these results be measured in your HEI?	Reports on the quality assessment of the TRNG programmes. The certified DL courses and MOOCs available online. Climate Service Platform Guidelines is implemented.
What financial means and human and other resources will be provided to sustain these results after the project ends?	Phased implementation of all of the work packages and introduction of the deliverables will initiate several interconnected self-sustained cycles (virtuous circles), which will ensure persistently improved quality of the project outcomes/outputs, stimulate collaboration between climate-dependent economic sectors and stakeholders, guarantee cost-effectiveness and sustainability of education and training. Implementation of general and specialized climate services in the National Hydrometeorological Services will form several external virtuous circles covering all climate-dependent economic sectors and all levels of the society's functioning and internal virtuous circles are determined by interaction of the academic institutions with sectoral Universities and climate-dependent economic sectors.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***

Oleg Tarabrin	Vice-Rector of ONMedU for Research and Teaching, Honored Worker of Science and Technology of Ukraine, Scientific Coordinator of ONMedU Simulation Centers, founder of the Regional School of Thromboprophylaxis, Doctor of Medical Sciences, Professor, Head of the Department of Anesthesiology, Intensive Care and Emergency Medicine. Areas of research: thrombotic safety in surgery, anesthetic management and intensive care in obstetrics, intensive care for polytrauma and burn disease, assessment of the hemostatic potential of patients in all areas of surgery, intensive care, large-scale population studies. Major publications in recent years: 1. Tarabrin, O.O., Tiutrin, I.I., Tarabrin, P.O., Volodychev, D.S., Sukhonos, R.Ye., Suslov, O.S., Tverdovskyi, I.V., Kuzmych, I.M., Basenko, I.L., 2019: Study of rheological properties of whole blood, in terms of physical principles of low-frequency piezoelectric thromboelastography method (LPTEG). In: Clinical anesthesiology and intensive care, No. 1 (13); pp. 32-45 (ua) 2. Irina V., Maria V., Vasiliev I., Groppa S., Ghicavii V., D'Ambra Mirta, Friptu V., Gladun S., Diug V., Spinel L., Elena G., Vartanov V., Stavrou I., Tarabrin O., Litarczek G. Role of pCO_2 (AV gap) of Multi Organ Dysfunction Syndrome // Journal of Biomedical and Pharmaceutical Sciences, 2019, Vol. 2, Iss. 2 3. Vorotyntsev, S.I., Tarabrin, O.O., 2018: Influence of epidural analgesia on hemostatic potential after abdominal surgery in patients with obesity. In: Clinical Anesthesiology and Intensive Care # 1 (11); pp. 5-14. (ua) 4. Tarabrin, O.O., Sazhyn, D.S., Sukhonos, R.Ye., Volodychev, D.S., Potapchuk, Yu.O., Suslov, O.S., Tarabrin, P.O., 2018: Comparison of instrumental methods for research into hemostasis. In: Clinical anesthesiology and intensive care, No. 1 (11); pp. 23-29. (ua) 5. Tarabrin, O.O., Tiutrin, I.I., Udut, V.V., Tarabrin, P.O., 2018: Low frequency whole blood piezotromboelastography (the algorithms for diagnostic and correction of hemostatic disorders): a practical guide book. Private Company 'University Book', - 200 p. (ua) 6. A. Ioscovich, S. Zedek, O. Tarabrin, A. Turenko, G. Mazurenko, D. Sazhyn, P. Tarabrin. Perioperative Management of Abdominal Hysterectomy: Novel Approaches and Review of the Literature //Clinical anesthesiology and intensive care №1(9)\2017 – c.68 – 75 7. - Tarabrin O., Shcherbakov S., Gavrychenko D., Mazurenko G., Ivanova V., Chystikov O. Trauma-induced coagulopathy – protrombin complex concentrate vs fresh frozen plasma // Critical Care 2016, Volume 20, Suppl 2, p. 54, P 119 8. Tarabrin O., Shcherbakov S., Gavrychenko D., Mazurenko G., Chystikov O. Using of prothrombin complex concentrate in obstetric massive bleeding // European Journal of Anaesthesiology 2016, Vol. 37, Suppl. 62, 04AP01-7 9. Tarabrin O., Lyoshenko I., Kirpichnikova K.P., Sukhanov A.A. The state of hemostasis in pregnant women with hydramnion // Journal of education, health and sport, vol.6 №1 2016, 129 – 137
Ruslan Vastyanov	Head of the ONMedU Department of General and Clinical Pathological Physiology, MD, Professor. Took part in the project 'Salzburg Medical Seminars' of Cornell University (USA) (1997), 'Open Health Society' (1996–1997), INTAS – 'Neuropharmacological Analysis of Resistive Forms of Epilepsy: The Role of Interleukins' (1999–2000). In 2015-2019, worked as an academic secretary of ONMedU, and now is a member of the specialized academic council. The author of more than 300 research papers in the field of experimental epileptology, neurophysiology, neuropharmacology, neurology, and 12 patents. Co-author of the first national textbook on physiology in English. In vivarium, under the supervision of Ruslan S. Vastyanov, the department's employees study an experimental model of the climate change impact on complications of the gestational process. There are 40 white Wistar rats under observation, which were divided into 10 females in four groups in order to study the influence of the solar luminosity on the follicular apparatus of the ovaries, as well as cold and heat waves on the duration of gestation and the development of complications. Major publications in recent years: 1. Yatsyna, O.I., Vastyanov, R.S., Savytska, I.M., Vernyhorodskyi, S.V., Heilenko, O.A., Kostiev, F.I., 2019: The effect of pharmacocorrection on the

	pathophysiological features of morphofunctional changes in the lower urinary tract in the presence of experimental hyperactive urinary bladder. In: Clinical surgery, No. 2 (86), pp. 64-69 (ua) 2. Yatsyna, O.I., Vastyanov, R.S., Diiachkova, N.V., Kharkhota, M.A., Kostiev, F.I., 2019: Adenylate erythrocyte system of rats with hyperactive urinary bladder under the conditions of its correction with medications of hormonal energotropic action. In: Experimental and clinical physiology and biochemistry, #1 (85), P. 38-43. (ua) 3. Vastyanov, R.S., Topal, M.M., Stoianov, O.M., Broshkov, M.M., Haluzinska, M.I., Levkovska, V.Yu., Shpota, O.Ye., 2019: Neuropharmacological analysis of the modulation of caudate nucleus activity under chronic convulsive activity. In: World of Medicine and Biology, No. 1 (67), P. 126-133. (ua) 4. Stoianov, A.N., Vastyanov, R.S., Mashchenko, S.S., Antonenko, S.A., Skorobrekha, V.Z., 2019: Possibilities to simulate cerebral ischemia in small animals. In: International Journal of Neurology, No. 6 (108), P. 30-36 (ua) 5. Stoianov, O.M., Vastyanov, R.S., Kolesnyk, O.O., Mashchenko, S.S., Antonenko, S.O., 2019: Experimental substantiation and dose-dependent effects of therapy of ischemic brain damage in rats with the mexicor. In: Ukrainian Bulletin of Psychoneurology, Vol. 27, Issue 4 (101), P. 17-23 (ru) 6. Stoianov, O.M., Kalashnikov, V.I., Vastyanov, R.S., Broshkov, M.M., Kalashnikova, I.V., Bakumenko, I.K., Haluzinska, M.I., Shyrikalova, A.O., 2019: Peculiarities of vegetative and vascular regulation of cerebral blood flow in patients with tension headache. In: World of Medicine and Biology, #4 (70), P. 168-172. (ua)
Varvara Sytnikova	Professor of the Department of Normal and Pathological Clinical Anatomy, Doctor of Medical Sciences. Field of research: morphological aspects of fetoplacental insufficiency in pregnancy pathology, complications in the perinatal period, postpartum period, somatic pathology of pregnant women, and infections in pregnant women. Major publications in recent years: 1. Melnychenko, M.G., Sytnikova, V.O., Kvashnina, A.A., 2019: Results of experimental simulation of postoperative peritoneal adhesions. In: Pathology, #1 (45), P. 39-44 (ua) 2. Sitnikova V.O., Nadvorna, O.M., Kashiyan, O.V., 2019: Morphological Research of placenta in women with preterm labor. In: 'Visnyk naukovykh doslidzhen', #2, P. 58–61 3. Sytnikova, V.O., Rosha, L.H., Honcharenko, H.Yu., 2018: Clinico-morphological features of internal endometriosis combined with endometrioid carcinoma of an endometrium in the women in post-menopause. In: Science Review, No. 2 (9), P.58-60 (ua) 4. Sytnikova, V.O., Honcharenko, H.Yu. 2018: Role of estrogen and progesterone receptors in the pathogenesis of adenomyosis in combination with endometrial hyperplasia in postmenopause. In: Art of medicine, #3 (7), P.123–126 (ua) 5. Zelinsky O.O., Zhovtenko O.V., Sytnikova V.O., Chaban K.V., 2017: Clinical course peculiarities of pregnancy and labour in women after myomectomy, their association with scar morphology / German Science Herald, #1, P.56–59 6. Honcharenko G.Y., Sytnikova V.O., Rosha L.G., 2017: Receptor activity of the eutopic and ectopic endometrium to estrogen and progesterone markers in case of adenomyosis available during postmenopause / German Science Herald, #6, P.34–40 7. Sytnikova, V.O., Petrenko, O.O., 2017: Trends in application of auxiliary reproductive technologies in Ukraine. In: Odessa Medical Journal, #1 (159), P.67-69 (ua)
Tetiana Shablii	Associate Professor at the ONMedU Department of Obstetrics and Gynaecology No. 2, a person in charge of KROK-2 and OSKE examinations, Candidate of Medicine, doctor of higher category. Member of the Ukrainian Association of Obstetricians and Gynecologists. Author of 5 patents and 35 publications. Research interests: noncarrying of pregnancy, premature delivery, pregnancy and childbirth in patients with a uterine scar, the climate change impact on the features of pregnancy and the occurrence of obstetric complications - bleeding, premature deliveries, placental dysfunction, large-scale population studies. Main publications for the recent years:

	1. Shablii, T.P., Artiukh, A.O., 2019: Prevention of placental dysfunction in pregnant women with iron deficiency states with or without presence of chronic inflammation. Abstracts. 'Scientific and practical conference with international participation, dedicated to the 90th anniversary of the birth of B.Ya. Reznik', 18-19 April 2019, Odessa. (ua) 2. Shablii, T.P., 2019: Cesarean section technique in modification of Tihomir Vejnoviis. Abstracts. Scientific and practical conference with international participation 'Perinatal Medicine in Ukraine: Challenges, Achievements, Priorities' (dedicated to the memory of the teacher - Professor O.T. Mykhailenko), 21-22 February 2019, Bukovyna State Medical University, Chernivtsi, P.150-152. (ua) 3. Shablii, T.P., Means of adaptation of higher medical education in Ukraine to the labour market requirements. Abstracts. Scientific and practical conference with international participation 'Perinatal Medicine in Ukraine: Challenges, Achievements, Priorities' (dedicated to the memory of the teacher - Professor O.T. Mykhailenko), 21-22 February 2019, Bukovyna State Medical University, Chernivtsi, P. 168-171. (ua) 4. Zelinskyi, A.A., Yermolenko, T.A., Shapoval, N.V., Shablii, T.P., Chumak, Z.V., 2018: Menopause as a unique 'female' risk factor for development of metabolic derangements. Tashkent, P. 39-40. (ru) 5. Shablii, T.P., Kengeliian, T.R., Malenko, M.F., 2017: The climate change impact on frequency of premature deliveries. In: Modern theoretical and practical aspects of clinical medicine. Odessa State Medical University, Odessa, p.154-155 (ua) 6. Shablii, T.P., Gorokh, Ya.V., 2017: Morphic and hysteroscopic characteristics of the inconsistent uterine scar after a caesarean section beyond pregnancy. In: 'Modern theoretical and practical aspects of clinical medicine'. Odessa State Medical University, Odessa, p.152 (ua) 7. Yermolenko, T.A., Shabliy, T.P., 2017: Menopause as a risk factor for development of metabolic disorders. Conference Abstracts. 'Modern theoretical and practical aspects of a healthy life style', Odessa, P.110-111. (ru) 8. Yermolenko, T.A., Shablii, T.P., 2017: Mathematical modelling in prognostication of the effectiveness of treatment of menopausal syndrome in women, Odessa, P. 108-109. (ru) 9. Shablii, T.P., Shabliy, O.V., Umnov, O.L., Means of adaptation of higher medical education in Ukraine to current requirements. In: Science Review - 7(7), December 2017, Vol.4. – P. 45-48. (ua)
Denis Volodychev	Assistant Lecturer at the ONMedU Department of Anesthesiology, Intensive Care and Emergency Medicine. Executive Secretary of the scientific journal 'Clinical Anesthesiology & Intensive Care'. Major publications in recent years: 1. Tarabrin, O.O., Tiutrin, I.I., Tarabrin, P.O., Volodychev, D.S., Sukhonos, R.Ye., Suslov, O.S., Tverdovskyi, I.V., Kuzmych, I.M., Basenko, I.L., 2019: Study of rheological properties of whole blood, in terms of physical principles of low-frequency piezoelectric thromboelastography method (LPTEG). In: Clinical anesthesiology and intensive care, No. 1 (13); pp. 32-45 (ua) 2. O. Tarabrin , A. Vladyka, O. Suslov , H. Balytska, R. Sukhonos , I. Basenko, D. Volodychev , P. Tarabrin. //http://newsletter.esahq.org Issue 78, 2019 3. Basenko, I.L, Suslov, O.S., Obieshchyk, D.K., Volodychev, D.S., 2019: Techniques to avoid stimulation of the obturator nerve in transurethral resection of urinary bladder tumors. In: Clinical anesthesiology and intensive care, # 2 (14), pp. 90-99. (ua) 4. Tarabrin, O.O., Sazhyn, D.S., Sukhonos, R.Ye., Volodychev, D.S., Potapchuk, Yu.O., Suslov, O.S., Tarabrin, P.O., 2018: Comparison of instrumental methods for research into hemostasis. In: Clinical anesthesiology and intensive care, No. 1 (11); pp. 23-28. (ua) 5. O. Tarabrin, I. Tutryn, I. Basenko, A. Turenko, P. Tarabrin, D. Sazhyn, D. Volodychev. Complex Correction of Thrombohemorrhagic Disorders in Patients with Giant Uterine Myoma // EC Gynaecology Volume 7 Issue 3; 2018; P. 76-80 6. Tarabrin, O.O., Tiutrin, I.I., Tarabrin, P.O., Volodychev, D.S., Sukhonos, R.Ye., Suslov, O.S., Tverdovskyi, I.V., Kuzmych, I.M., Basenko, I.L., 2018: Technology for low-frequency piezotromboelastography in monitoring of

	antithrombotic therapy. In: Clinical anesthesiology and intensive care, # 2 (12), pp. 23-28. (ua) 7. Basenko, I.L., Suslov, O.S., Volodychev, D.S., 2018: Recommendations of the Third Congress of American Society of Regional Anesthesia and Pain Medicine on Toxicity of Local Anesthetics. In: Clinical anesthesiology and intensive care, # 2 (12), pp. 23-28 (ua) 8. Tarabrin O., Mazurenko A., Tarabrin P., Sazhyn D.,Volodychev D. The diagnosis and correction of hemocoagulation disorders in operative delivery. // European Journal of Anaesthesiology 2017, Vol. 37, Suppl. 62, 12AP04-5 9. Tarabrin O., Mazurenko A., Tarabrin P., Sazhyn D., Volodychev D. Prevention of disorders of blood coagulation at the patient after total hysterectomy // European Journal of Anaesthesiology 2017, Vol. 37, Suppl. 62, 12AP05 – 5

Partner number		**P10**
Organisation name & acronym	**Ministry of Education and Science of Ukraine (MESU)**	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

The Ministry of Education and Science of Ukraine is the central executive public body in the system of Ukrainian government responsible for developing, implementation and monitoring nation-wide policies in the areas of education and science. Programmes and initiatives launched and supported by the Ministry aim at providing greater access to high-quality, internationally recognized education and training opportunities for Ukrainian and foreign students, researchers, academic and administrative staff.

The Ministry operates under the system of Directorates Generals in charge of evidence-based policy making in various fields of education and science (pre-school and school education, vocational education and training, higher education, inclusive education, innovation and technological transfer, science and research, strategic planning and European integration).

Structural reforming and capacity building in higher education have a profound impact on the policy formation and are central to boosting competitiveness of the national system of higher education, particularly, within the framework of integration into the European Higher Education Area and the European Research Area. In that, solid competence and proactive role of the Ministry serve as the cornerstone for safeguarding the success and welfare of Ukraine and its citizens as integral part of European nations.

The main objectives of the current higher education reform encompass institutionalization of effective system of higher education quality assurance, establishing synergy between higher education and research, modernization of the national qualifications system, increasing effectiveness and efficiency of the funding models, and enhancing its international dimension.

The Ministry works towards establishing compliance with the requirements and standards of the European Union in areas of education and research and takes into account best national and institutional practices of the EHEA and ERA stakeholders.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	N/A
Number of students	N/A
Number of Bachelor degrees offered	N/A
Number of Master degrees offered	N/A
Number of PhD degrees offered	N/A
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	N/A

F.3.2 – Role of your organisation in the project

Please describe also the role of your organisation in the project (limit 1000 characters).

The role of the Ministry of Education and Science of Ukraine in the ClimEd project is to ensure project quality during the implementation phase and benchmark the project outcomes against the proposed by the project team legislative changes in respective fields. In addition, the MESU shall ensure support to sustainability of the project after its completion and dissemination of project results.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*

Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

For new courses

What new courses will the project implement in your HEI?	N/A

For each course please fill the following nested table:

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
Estimated starting date of the new programme	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	N/A
For each course please fill the following nested table:	

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
% of the modernised subjects compared to total subjects included in the course	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

Provide information on (if applicable)

List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A
Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A
Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	N/A
How will the impact of these results be measured in your HEI?	N/A
What financial means and human and other resources will be provided to sustain these results after the project ends?	N/A

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Olena Vrublevska	State Expert at Expert Group on Regulatory Support in Higher and Adult Education, Directorate of Higher and Adult Education, Ministry of Education and Science of Ukraine
Olexandr Smyrnov	Head of Analytics, Funding and International Relations Expert Group, Directorate of Higher and Adult Education, Ministry of Education and Science of Ukraine Present responsibilities: • Monitor and analyse dimensions and concepts of the higher education system of Ukraine • Launch, develop and implement higher education policies and sectoral policies • Coordinate implementation of performance-based funding mechanisms of state expenditures on higher education and supervise legal changes on increasing financial institutional autonomy • Develop the higher education data system to inform evidence-based state policy formulation and implementation • Represent Ukraine in the Bologna Follow-Up Group (BFUG) • Contribute to other projects on higher education Professional profile: quality assurance, higher education licensing and accreditation, student-centered learning and teaching, higher education governance and funding Manifold support within the framework of the Bologna Follow-Up Group of ensuring compliance of Ukrainian HE system with the EHEA provisions, incl. ESG 2015 Development of the legislative changes on the Ukrainian HE system, including coordination of the working group on drafting the Law on Higher Education (2014)
Ihor Baluba	Head of Qualification Framework and Adult Education Expert Group, Directorate of Higher and Adult Education, Ministry of Education and Science of Ukraine
Kateryna Suprun	State Expert at Analytics, Funding and International Relations Expert Group, Directorate of Higher and Adult Education, Ministry of Education and Science of Ukraine Present responsibilities: • Analyze legal, financial and organizational aspects of the national higher education system • Support evidence-based conceptualization and implementation of performance

	funding formula for higher education institutions • Contribute to enhancing financial autonomy of Ukrainian universities • Coordinate Erasmus+ CBHE projects to enhance structural capacity of Ukrainian higher education • Represent Ukraine in the Bologna Follow-Up Group (BFUG) Professional profile: institutional autonomy, higher education governance and funding, quality assurance (incl. QA of joint degrees), qualification frameworks Enlarging the database of the EU policy tool on transparency and comparability of HEIs, U-Multirank, with the Ukrainian HEIs and preparing analytics on ensuring consistency and compatibility of the national data with the EHEA action lines Support of institutionalization of EHEA provisions on QA, incl. ESG 2015, in the Ukrainian higher education system in the capacity of the Student Expert on Higher Education Quality Assurance (QA Pool) Contributing to qualitative and quantitative analysis of the 2017 edition of the Course Quality Student Survey (CQSS) on the quality of Erasmus Mundus Joint Master programmes (Erasmus Mundus Association)

Partner number		**P11**
Organisation name & acronym	The Ministry of Energy and Environment Protection of Ukraine (MEEPU)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Ministry of Energy and Environmental Protection of Ukraine is the central body in the system of central executive bodies responsible for formation and implementation of state policy in the field of environment protection, ecological and within lines of authority provided for by law, biological and genetic safety, management of waste, pesticides and agrochemicals, rational use, reproduction and protection of natural resources, territorial waters, continental shelf and exclusive economic zone of Ukraine, land reproduction and protection, conservation, restoration and sustainable use of biological and landscape diversity, formation, maintenance and use of ecological network, organization, protection and use of specially protected natural areas, protection of the ozone layer, regulation of negative anthropogenic impact on climate system and climate change adaptation, implementation, within its competence, the requirements of the UN Framework Convention on climate change and the Kyoto Protocol, development of water management and land improvement, geological exploration and rational use of mineral resources and supervise the observance of the legislation on environmental protection, rational use, restoration and protection of natural resources.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	N/A
Number of students	N/A
Number of Bachelor degrees offered	N/A
Number of Master degrees offered	N/A
Number of PhD degrees offered	N/A
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	N/A

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

Role of the Ministry of Energy and Environmental Protection of Ukraine in the ClimEd project is to define how needs for and expectations of various categories of end-users of climate information will be met through the Project outcomes/outputs. In addition, the MEEPU shall ensure support to sustainability of the project after its completion and dissemination of project results.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

For new courses

What new courses will the project implement in your HEI?	N/A

For each course please fill the following nested table:

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
Estimated starting date of the new programme	N/A
Number of students to be accepted in the first year/ second year	N/A
Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

For updated courses

Which existing courses will be updated in your HEI?	N/A

For each course please fill the following nested table:

Title	N/A
Level of study	N/A
List of subjects and credits (ECTS or comparable credit system) for each of them	N/A
Estimated date of accreditation and accreditation body	N/A
% of the modernised subjects compared to total subjects included in the course	N/A
Number of students to be accepted in the first year/ second year	N/A

Number of teaching staff to be trained	N/A
Internship /placements (if applicable)	N/A
List of equipment to be purchased for this course? (if applicable)	N/A

Please copy and paste nested tables as necessary

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

Provide information on (if applicable)

List the number of existing centres/networks in your HEI	N/A
Is the centre to be created a new one or an update?	N/A
If new, why is a new centre necessary? If updated, why is an updated centre necessary?	N/A
Where will the centre be located in the institution?	N/A
Will this infrastructure be made available to the centre after the project ends?	N/A
How many people will be employed in the centre?	N/A
Will the institution fund these posts after the project ends?	N/A
How many administrative staff will be trained?	N/A
Which procedures will be updated /introduced in the institution?	N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	N/A
How will the impact of these results be measured in your HEI?	N/A
What financial means and human and other resources will be provided to sustain these results after the project ends?	N/A

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project
Please add lines as necessary.

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Ivan Levchenko	Chief Expert, Division of the European Integration, Ministry of Energy and Environment Protection of Ukraine

F.4 List of Associated Partners

(Where applicable)

Capacity-building projects can involve associated partners who contribute to the implementation of specific project tasks/activities or support the dissemination and sustainability of the project. Associated Partners cannot be responsible for core activities of the project (e.g. management, coordination, monitoring, leader of a work group etc.). ***No financial contribution from the project grant will be allocated to these organisations.***

Name of organisation	Type of institution	Website	City	Country	Role in the project	Activities and related Work Packages
N/A						

Please insert rows as necessary

PART G – Impact and Sustainability

G.1 Expected impact of the project

Please explain which target groups will use the project outputs /products /results. Describe how the target groups will be reached and involved during the life of the project and afterwards and how the project will benefit the target group at local, regional, national and/or regional level. Please structure your description according to the different levels of impact and stakeholders.

#	Project results	Who will they impact at national, regional level?	How?
1	1. Acquisition of European experience in the field of climate education, advanced educational and information-communication technologies 2. Acquisition of European experience in the field of additional climate education and adapting the competency framework for climate services developed by the WMO Commission for Climatology	– Academic institutions-partners in Ukraine	- Acquisition of European experience will be through trainings during the project, which will improve the international transparency and visibility of teachers and increase their professionalism.
2	1. Expectations of end-users regarding the future content of climate service. 2. Analytical analysis of the current state of climate service in Ukraine	– Academic institutions-partners in Ukraine	- Will be involved through direct participation: 1) in gathering end-user needs for climate information and 2) in the analysis of the current state of climate services, which will allow the scientific and pedagogical staff of specialized universities to create educational strategies that will be aimed at meeting the needs of certain end-users for climate information, will be flexible and easily adaptable to the needs of the modern labor market
3	1. Adaptation of the competency framework for climate service taking into account the specific conditions of Ukraine. 2. Educational needs in accordance to the analysis of the current state of climate service in Ukraine and adaptation of the competency framework to the certain conditions of Ukraine. 3. The concept of multi-level	– Academic institutions-partners in Ukraine	– Thanks to close cooperation with European experts-developers of standards in the field of climate services, as well as with specialists in climate-dependent economic sectors, they will be know much better the educational needs of climate-dependent sectors, better oriented in the unsolved practical tasks in the field of climate services facing the Hydrometeorological Service; – Sustainable and planned

	integrated practical-oriented professional training in the field of climate service. 4. General strategies for creating courses on climate service, climate change adaptation and mitigation for different categories of target groups based on identified educational needs, European experience and considering existing standards and methodologies.		cooperation of the Consortium with the Hydrometeorological Service of Ukraine, climate-dependent economic sectors and other stakeholders through consultations, workshops, and trainings to discuss the effectiveness of training programs and to quickly establish new training guidelines and to adapt training courses due to new needs or competencies in the operational work in relations with climate changes and the need to take them into account in climate-dependent economic sectors at the national level.
4	1. Courses for various levels of continuing professional education in the field of climate services. 2. Courses that form the socio-economic and information and communication competencies on specialists in the field of climate services. 3. Modules on the economics of climate change for their introduction into courses in the field of general and specific climate services. 4. Courses on climate change, adaptation to climate changes and mitigation of their consequences for specialists in the climate-dependent sectors, decision-makers and policy-makers, representatives of business structures. 5. E-learning modules (eLearning) and Massive Open Online Courses (MOOC) to improve climate literacy in the population.	– Hydrometeorological Service staff, – Specialists of climate-dependent economic sectors, – Decision-makers and policy-makers, – Business structures, financial organizations, – All comers, – Foreign students who want to improve their skills	– Access to a variety of courses, trainings, practices, teaching materials (including external international ones), networking activities based on a research-and-education virtual platform, which will be an interactive network of Internet resources in the field of climate services
		– Teaching staff at partner academic institutions	– Will be involved through the engage of the courses development and review of curricula, developing of the structural parts of the courses, including for distance learning, conducting online and offline courses, as well as organizing educational and methodological seminars, trainings, and consultations aimed to exchange experiences in the academic structures of the consortium
5	1. Research-and-education virtual platform “Climate service”. 2. The manual for operation of the research-and-education platform "Climate service".	– Teaching staff at partner academic institutions in Ukraine; – Students of various courses in the field of general and specialized climate services; – Students of various courses in	– Numerous theoretical and applied scientific studies, in collaboration with industry-specific universities, subdivisions of the Hydrometeorological Service of Ukraine and other

		the field of climate change, adaptation to climate change and mitigation; – Foreign students.	interested parties; – Development and introduction of innovative educational resources and facilities, namely simulators, cases, projects with the assistance of specialists from partner universities, European experts and the faculty members of the University.

Overview of short term impact indicators (during the project EU funding period)

Short term impact	Target groups/potential beneficiaries	Quantitative indicators (in numbers please)	Qualitative indicators
Improvement to the qualifications of the staff of the hydrometeorological services	Hydrometeorological staff	Number of course-takers who successfully completed the course of study: 200	Compliance of the re-trained staff with new competencies in climate service Evaluation of the study process in accordance with the Kirkpatrick, D. Phillips models and CIRO Scheme
Development of skills and abilities for working with climate information awareness among users	Staff of climate-dependent industries, business entities, and policy and decision makers	Number of course-takers who successfully completed the course of study: 500	Gaining new knowledge about climate and competencies in the field of climate services. Evaluation of the study process in accordance with the D. Phillips model and CIRO Scheme
Improving climate literacy and skills in environmental behavior and adaptation to climate change	The general population	Number of course-takers who successfully completed the course of study: 200	Development of new knowledge and skills on climate and climate change Evaluation of the study process in accordance with the Kirkpatrick model Anonymous surveys during and after the training events
Cooperation with European universities and acquaintance with advanced educational and information and communication technologies of scientific and pedagogical staff of Ukrainian universities	Teachers and trainers, academic staff	Carrying out of scientific and methodical events in academic institutions of partners (7 trainings); Working meetings and meetings - 4	Compliance of personnel with competences in the field of modern scientific and educational technologies. Evaluation of the study process in accordance with CIRO Scheme

Overview of long term impact indicators (after the projects EU funding period)

Long term impact	Target groups/potential beneficiaries	Quantitative indicators (in numbers please)	Qualitative indicators
Improvement in the qualitative composition of the staff of the hydrometeorological services	Operational units of the Hydrometeorological Services	External and internal staff testing Analysis of summary tables, including information on the group of specialists who took a training, and on the group of specialists who did not (control group). A comparative assessment of both groups should be carried out before and after the training.	Positive feedback from the end users (Hydrometeorological Services) received through surveys and official letters at the end of the project. Expert Assessment of at the end of the project
Access to e-learning courses of the ClimEd	Partner HEIs	Access is provided to students and participants of HEIs participating in the project consortium.	A survey of students and course participants at the end of the project for the accessibility and convenience of use for the e-courses
Promotion of developed distance learning courses and individual structural units of the courses to international educational platforms of EUMETCAL, MetEd	Foreign students interested in advanced training in climate service	Possibility of issuance Internationally recognized Certificates of Completion of courses under the auspices of the EUMETCAL platform.	International representation of the ClimEd partner organizations
Improvement of the international representation	Foreign students, Partner HEIs	Upon completion of the project: Number of applicants for entry to the distance learning courses hosted on external educational platforms	Progress in international rankings
Graduation (successful completion of training or retraining courses)	Students enrolled at the ClimEd courses	An increase in the number of graduates in the staff of the hydrometeorological services, compared to those who did not undergo advanced training.	Certificates issued upon successful completion of the course programme.
Opportunity to increase the position	Staff of the hydrometeorological services, climate-dependant industries, business structures	Increase in the number of higher positions held according to the professional level upon completion of the	Interest of potential employers to graduates of the ClimEd courses, according to surveys at the end of the project

		training or retraining courses	
Exchange of experience and dissemination of the best developments	Partner HEIs of ClimEd	Coordination of the developed programmes and courses, their unification and acceptance by all of ClimEd partners	Internal and external Expert Assessment of at the end of the project
Promotion the established research-and-education platform as a system of advanced vocational education in the field of climate services for various target groups of users	Management staff and personnel of hydrometeorological services, climate-dependant industries and business structures, foreign students interested in training and / or retraining within the framework of the educational programs of ClimEd	Organization of annual international seminars / conferences; publication and distribution of newsletters at least 2 times a year.	Expansion of international representation of ClimEd's developed educational system among potential listeners and users of climate services
Representation of some of the developed courses as MOOCs	Course takers from the EU and Partner Countries interested in gaining more in-depth knowledge in the field of Hydrometeorology	Issuance of certificates upon successful completion of training	Holding surveys twice: immediately after graduation and three months upon the graduation

G.2 Dissemination and exploitation strategy

Please explain how the dissemination will be organised during and after the project's lifetime. Define each target group and what communication channels will be used to reach them and when.

Target Group	Means of Communication to Reach These Target Groups	When	Indicators to measure the effectiveness of the means of communication
Academic institutions: faculty, students (master and doctoral students)	stakeholder roundtables, business-academy conferences, dedicated ClimEd panels on conferences organised by PIs and arranging follow-up special issues of academic journals in order to reach the academic community, research-and-education platform	throughout the project period in Ukraine	- Number of the held events / presentations / conferences / exhibitions complete with the number of participants
Hydrometeorological institutions in Ukraine: managers and personnel	the e-brochure on the project, e-newsletters, project web-site, project	throughout and after the project period in Ukraine	- Number of Framework Agreements with the subdivisions of the

	DL portal, acting as an information-carrying medium		Hydrometeorological Services in Ukraine on the provision of climate service training and re-training. - Official Letters with positive feedback on climate service training and re-training
Political and economic public bodies	the e-brochure on the project, stakeholder roundtables, business-academy conferences, dedicated to ClimEd, project web-site, project DL portal, acting as an information-carrying medium	throughout and after the project period in Ukraine and beyond the Project consortium	- Official documents from the structures of state governance that prove recognition of the project results. - Official Letters with positive feedback on education in climate change and the related aspects - Number of requests for consultancy concerning the issues of the climate change and the related aspects
Experts in climate-dependent economic sectors	the e-brochure on the project, e-newsletters, stakeholder roundtables, business-academy conferences, dedicated to ClimEd, project web-site, project DL portal, acting as an information-carrying medium	throughout and after the project period in Ukraine and beyond the Project consortium	Number of Framework Agreements with the sectoral entities in Ukraine on the provision of education in climate change and the related aspects. - Official documents from sectoral entities that prove recognition of the project results. - Number of requests for consultancy concerning the issues of the climate change and the related aspects Number of course takers from these entities, positive feedback from them. Number of individual takers, positive feedback from them
Experts from municipal organizations	the e-brochure on the project, e-newsletters, project web-site, project DL portal, acting as an information-carrying medium	throughout the project period in Ukraine and beyond the Project consortium	- Number of Framework Agreements with the municipal organizations in Ukraine on the provision of education in climate change and the related aspects. - - Number of requests for consultancy concerning the issues of

			the climate change and the related aspects Number of course takers from these organizations, positive feedback from them. Number of individual takers, positive feedback from them

G.3 Sustainability

Explain how exploitation activities will ensure optimal use of the results within the project's lifetime and afterwards. Explain how the impact of the project will be sustained beyond its lifetime. Please list the outcomes that you consider sustainable and describe the strategy to ensure their long lasting use beyond the project's lifetime. Also explain how the results will be mainstreamed and multiplied at national/regional level. Describe the strategy foreseen to attract co-funding and other forms of non-EU support for the project.

Sustainable Outcomes	Strategy to ensure their sustainability	Resources necessary to achieve this	Where will these resources be obtained?
promotion of the good health	1) development of strategies to reduce the impacts of climate change upon human population health 2) establishment of the extensive network of consulting services to be provided by specialists in specialized climate services, as well as representatives of the partner institutes 3) dissemination of the project results to enhance public understanding of adverse climate change effects on human health	1) health professionals having knowledge on adverse impacts of climate change on human health, skills to choose the optimal strategy of development of the health-care system in the face of a constant threat of climate change, and the knowledge on measures that should be taken to reduce risks to the general public from climate extremes 2) - climate service specialists having the necessary healthcare competencies - staff members of the partner institutes 3) the general public having knowledge of the health effects of climate change and the measures should be taken by everyone to	1) Educational system providing courses for health-care workers in the climate change and related aspects 2) -Multi-level training system, offering courses in climate services for professionals of the National Hydrometeorological Services - Collaboration with WMO and the World Health Organization within the Global Campus facilitated by the Global Framework for Climate Services 3) preparation of dissemination tools and materials under the Dissemination Strategy, courses in climate change and the related aspects for the general public

		reduce risk	
promotion of sustainable development of the agricultural sector and rural communities	1) the development of strategies for improved agricultural systems and land-use under climate change and constant external and internal migration 2) establishment of the extensive network of consulting services to be provided by specialists in specialized climate services, as well as staff members of the partner institutes	1) agricultural specialists who are experienced users of climate information and climate services both for planning and for operational purposes 2) - climate service specialists having the necessary competencies in agriculture - staff members of the partner institutes	1) Educational system providing courses for agricultural specialists in the climate change and related aspects 2) -Multi-level training system, offering courses in climate services for professionals of the National Hydrometeorological Services - Collaboration with WMO and the Food and Agriculture Organization of the United Nations and World Food Programme within the Global Campus facilitated by the Global Framework for Climate Services
promotion of the improvement of human life quality in cities; reducing cities environmental footprint	1) the development of strategies for improved city management system and land-use under climate change 2) establishment of the extensive network of consulting services to be provided by specialists in specialized climate services, as well as representatives of the partner institutes 3) dissemination of the project results to improve public understanding on public engagement with climate change mitigation	1) experts from municipal organizations having knowledge on adverse impacts of climate change on city systems, facilities and infrastructures, skills to choose the optimal strategy of city adaptation under climate change, and the knowledge on measures that should be taken to protect population from climate extremes 2) - climate service specialists having the necessary city management competencies - staff members of the partner institutes 3) the general public having knowledge of the effects of climate change and understanding on public engagement with	1) Educational system providing courses in the climate change and related aspects for experts from municipal organizations 2) -Multi-level training system, offering courses in climate services for professionals of the National Hydrometeorological Services - Collaboration with WMO and the United Nations Office for Disaster Risk Reduction within the Global Campus facilitated by the Global Framework for Climate Services 3) Educational system providing courses in the climate change and related aspects for general public

		climate change mitigation	
promotion of reducing carbon emissions	development of strategies for sustainable natural resource management in order to reduce the anthropogenic burden on the climate and improve the environment	members of small, medium-sized and large businesses which be able to implement resource-efficient policies in enterprises with usage of renewable resources	Educational system providing courses in the climate change and related aspects for members of small, medium-sized and large businesses
promotion of sustainable water management	development of strategies for sustainable water management under climate changes	- greater cooperation and collaboration between hydrologists ad climatologists of Odessa State Environmental University - active cooperation with stakeholders and participation them in national climatological and hydrological programmes	- round-table discussions, active and regular exchange of knowledge, up-to-date information, results of scientific researches in the field of impact of climate change on water resources - Collaboration with WMO and Global Water Partnership within the Global Campus facilitated by the Global Framework for Climate Services.
promotion of sustainable and resilient building, efficiency planning	1) strategic planning for land-use and urban design under extreme climate changes 2) establishment of the extensive network of consulting services to be provided by specialists in specialized climate services, as well as staff members of the partner institutes	1) experts in technical design and construction being able to adapt building areas to adverse impacts of climate change and reduce urban climate change vulnerability 2) - climate service specialists having the necessary competencies in technical design and construction - staff members of the partner institutes.	1) Educational system providing courses in the climate change and related aspects for experts in technical design and construction 2) -Multi-level training system, offering courses in climate services for professionals of the National Hydrometeorological Services - Collaboration with WMO and stakeholders
promotion of affordable, reliable, sustainable and modern energy	1) – development of strategy of reducing energy sector vulnerability to climate changes - creation of strategy of development of energy-efficiency and clean technologies	1) experts in energy sector having the necessary competencies in climatology 2) - climate service specialists having the necessary energy industry competencies - staff members of the	1) Educational system providing courses in the climate change and related aspects for experts in energy sector 2) -Multi-level training system, providing courses in climate services for professionals of the National

	- creation of strategy of development of renewable energy 2) establishment of the extensive network of consulting services to be provided by specialists in specialized climate services, as well as staff members of the partner institutes	partner institutes.	Hydrometeorological Services - Collaboration with WMO and stakeholders
quality education on climate change and the related aspects for decision-makers and policymakers, and the general public	- strategies for the internationalization of educational programs based on the educational needs of target groups; - development of visual content; application of advanced learning, information and communication technologies	qualified research and educational staff possessing the advanced educational, information and communication technologies	- active collaboration with WMO within Global Campus - round-table discussions, regular and active exchange of knowledge, conferences with participation of stakeholders
quality education on climate change and the related aspects for experts in climate-dependent economic sectors, experts from municipal organizations, members of entrepreneurial entities	- strategies for the internationalization of educational programs based on the educational needs of target groups; - development of visual content; application of advanced learning, information and communication technologies	qualified research and educational staff possessing the advanced educational, information and communication technologies	- active collaboration with WMO and various professional international organizations within the Global Campus facilitated by the Global Framework for Climate Services - round-table discussions, regular and active exchange of knowledge, results of scientific research in the field of the impact of climate change on the development of economic sectors, conferences with stakeholders - liaising with necessary stakeholders
quality training in climate services	- strategies for the internationalization of training programmes based on the needs of target groups; - development of joint scientific research	qualified research and educational staff possessing the advanced educational, information and communication technologies	- active collaboration with WMO and various professional international organizations within the Global Campus facilitated by the Global Framework for Climate

	projects in the field of the impact of climate change on development of economic sectors; - capacity building of existing knowledge, numerous theoretical/fundamental and applied researches in climate change and related aspects		Services - round-table discussions, regular and active exchange of knowledge, results of scientific research in the field of the impact of climate change on the development of economic sectors, conferences with stakeholders - liaising with necessary stakeholders
quality climate services	development of training in the field of climate services	Multi-level training system, providing courses in climate services for professionals of the National Hydrometeorological Services	active cooperation of Odessa State Environmental University, sectoral Ukrainian universities, stakeholders, WMO and various professional international organizations within the Global Campus facilitated by the Global Framework for Climate Services Sustainable and systematic cooperation between the Hydrometeorological Centers of Ukraine and the Consortium universities through consultations, seminars, and trainings in order to discuss the effectiveness of training programmes and to rapidly provide new focus for training and adjust training courses in response to emerging new needs or competencies in production activities due to climate change and need to mainstream them in climate-dependent economic sectors at the national level.

PART H - Other EU grants

*Please list the **projects** for which the organisations involved in this application have received financial support from EU programmes.*

Programme or initiative	Reference number	Beneficiary Organisation	Title of the Project
TEMPUS IV	159352-TEMPUS-FI-TEMPUS-JPHES	University of Helsinki (Finland), Odessa State Environmental University (Ukraine)	Development of Qualification Framework in Meteorology
TEMPUS IV	159173-TEMPUS-1-2009-1-DE-TEMPUS-JPCR	Odessa State Environmental University (Ukraine)	EU Based Course in Foodstuff Expertise & Quality Control
TEMPUS IV	511390-TEMPUS-1-2010-1-SK-TEMPUS-JPCR	Odessa State Environmental University (Ukraine)	Environmental Governance for Environmental Curricula
TEMPUS IV	544524-TEMPUS-1-2013-1-PL-TEMPUS-SMHES	Odessa State Environmental University (Ukraine)	Qualifications Framework in Environmental Science at Ukrainian Universities
Erasmus + Capacity Building in the Field of Higher Education	561592-EPP-1-2015-1-FR-EPPKA2-CBHE-JP	Ministry of Education and Science of Ukraine	Establishing Modern Master-level Studies in Information Systems
Erasmus + Capacity Building in the Field of Higher Education	561640-EPP-1-2015-1-AZ-EPPKA2-CBHE-JP	Ministry of Education and Science of Ukraine	Advocacy Establishment for Students through Ombudsman Position
ERASMUS+	561975-EPP-1-2015-1-FI-EPPKA2-CBHE-JP	University of Helsinki (Finland), Odessa State Environmental University (Ukraine)	Adaptive learning environment for competence in economic and societal impacts of local weather, air quality and climate
Erasmus + Capacity Building in the Field of Higher Education	562013-EPP-1-2015-1-PL-EPPKA2-CBHE-SP	Ministry of Education and Science of Ukraine	Quality assurance system in Ukraine: development on the base of ENQA standards and guidelines
Erasmus + Capacity Building in the Field of Higher Education	573861-EPP-1-2016-1-EE-EPPKA2-CBHE-JP	Ministry of Education and Science of Ukraine	European Human Rights Law for Universities of Ukraine and Moldova
Erasmus + Capacity Building in the Field of Higher Education	574050-EPP-1-2016-1-DE-EPPKA2-CBHE-SP	Ministry of Education and Science of Ukraine	Students' Mobility Capacity Building in Higher Education in Ukraine and Serbia
Erasmus + Capacity Building in the Field of Higher Education	574064-EPP-1-2016-1-LT-EPPKA2-CBHE-SP	Ministry of Education and Science of Ukraine	Structuring cooperation in doctoral research, transferrable skills training, and academic writing instruction in Ukraine's regions
Erasmus + Capacity Building in the Field of Higher Education	574273-EPP-1-2016-1-AM-EPPKA2-CBHE-SP	Ministry of Education and Science of Ukraine	Promoting internationalization of research through establishment of Cycle 3 QA System in line with the European Agenda
Jean Monnet Networks	575097-EPP-1-2016-1-	University of Helsinki	European Network on

	FI-EPPJMO-NETWORK		Soft Law Research
Capacity Building in higher education	585884-EPP-1-2017-1-FI-EPPKA2-CBHE-JP	University of Helsinki	Forestry Higher Education Advancement in Laos
Erasmus+ Capacity Building in the field of Higher Education	586000-EPP-1-2017-PT-EPPKA2- CBHE-JP	Estonian Life Science University (Estonia)	B-learning Uzbekistan Veterinary Network
Erasmus + Capacity Building in the Field of Higher Education	586109-EPP-1-2017-1-RO-EPPKA2-CBHE-SP	Ministry of Education and Science of Ukraine	Implementation of Education Quality Assurance system via cooperation of University- Business-Government in HEIs
Erasmus+ Capacity Building in the field of Higher Education	586335-EPP-1-2017-1-DE-EPPKA2-CBHE-JP	Estonian Life Science University (Estonia)	SUNRAISE - Sustainable Natural Resource Use in Arctic and High Mountainous Areas
Erasmus+ Capacity Building in the field of Higher Education	586471-EPP-1-2017-1-EE-EPPKA2-CBHE-JP	Estonian Life Science University (Estonia), Odessa State Environmental University (Ukraine)	Integrated Doctoral Program for Environmental Policy, Management and Technology
Erasmus+ Capacity Building in the field of Higher Education	598176-EPP-1-2018-1-LT-EPPKA2-CBHE-JP	Estonian Life Science University (Estonia)	Internal quality assurance system for agriculture and biosystem engineering related HEI of Algeria
Erasmus+ Capacity Building in the field of Higher Education	610327-EPP-1-2019-1-DEEPPKA2-CBHE-JP	Estonian Life Science University (Estonia)	Marine Coastal and Delta Sustainability for Southeast Asia
Strategic partnership for adult education	2018-1-FI01-KA204-047308	University of Helsinki	Village Social Enterprise learning material, guidance and networking

Please insert rows as necessary.

*Please list **other EU grant proposals** submitted by your organisation, or by any partner organisation in this project proposal. For each grant application, please mention the EU Programme concerned and the amount requested.*

Programme concerned	Beneficiary Organisation	Amount requested
Erasmus+ Key Action 2 Capacity building	**University of Helsinki**	**EUR 910,707.00**

Please insert rows as necessary.

PART I - Check List

*Please make sure that you **fully** completed each part of this application form, as follows:*

- ☒ PART D - RELEVANCE OF THE PROJECT
- ☒ PART E - QUALITY OF THE PROJECT DESIGN AND IMPLEMENTATION
  - ☒ E.4 Logical Framework Matrix
  - ☒ E.5 Workplan
  - ☒ E.6 Work packages
- ☒ PART F - Quality of the Project Team and Cooperation Arrangements
- ☒ PART G - Impact and Sustainability
- ☒ PART H - Other EU grants
- ☒ PART I - CHECK LIST