Allegato A
Annex A

FORM N. 1

PhD Programme	**Architettura**
Cycle	**XXXVII**
Curricula	**1. Architecture: Theory and Design** **2. Urban Regeneration**
Coordinator	**Prof.ssa Francesca Fatta**
Department	Dipartimento Patrimonio, Architettura e Urbanistica **(PAU)**
Duration	3 years
PhD positions	**n. 5 scholarships**: - **n. 2 scholarsphips** within the thematic area Action IV.4 "additional PhD scholarships on Innovation topics" ***Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B)"*** - **n. 3 scholarsphips** within the thematic area Action IV.5 "additional PhD scholarships on Green topics" ***Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C)***
Public-private partnership	The public-private partnership related to the measure provided in the art. 2 of the MUR Decree of the 25th June 2021, n. 737, including the host company for the research period of 6 (min) -12 (max) months, provided for by the implementing regulations of the MUR Decree of the 10th August 2021, no. 1061, will be identified by the PAU Department, on the proposal of the Doctorate Course Council.
Educational qualification required	For italian graduate: laurea magistrale, o specialistica, o vecchio ordinamento. For foreign graduates: Master degree.
Documentation to be attached to the application	• Application form for PhD programm, as given by online procedure, printed and signed; • a research proposal focused on the Action IV.4 "additional PhD scholarships on Innovation topics" ***Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B)*** or on the Action IV.5 "additional PhD scholarships on Green topics" ***Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C)***; • curriculum Vitae (EU format); • payment receipt of the partecipation fee of 65,00 euros **(not refundable)**; • self-certification of the University degree in accordance with the D.P.R. 445 of the 28 december 2000; • photocopy of a valid document of identification signed by the candidate.
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.4 "additional PhD scholarships on Innovation topics" Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B)**
Curriculum	**Urban Regeneration**
PhD scholarship title n. 1	**Micro-cities new communication languages**
Project description	The research activity, lasting three years, concerns the realization of an experimental project of an industrial nature for the use and enhancement of the villages of the Sicilian Ionian coast.

	The research involves the design and implementation of a mobile application (Android and iOS operating systems) for the use of cultural heritage, with the possibility of triggering geo-localized interactions for the activation of animations, virtual reality, and edutainment. The project combines, between research and applicative experimentation, the theme of "micro-cities", designing an innovative, industrial and multimedia scientific product that favours communication and enhancement with strategies aimed at the target of users.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.4 "additional PhD scholarships on Innovation topics" Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B)**
Curriculum	**Urban Regeneration**
PhD scholarship title n. 2	**Seismic risk reduction and monitoring of museum collections**
Project description	Recent pandemic event and related restriction strongly limited the tourist presence and economic impact on cultural activity: a strategic sector of Italian economy. Italy hosts one of the largest Cultural Heritage in the world, often exhibited in museums, art gallery or historical buildings. Its protection is of capital importance to guarantee his safeguard for next generations and the income from tourism activities. Past earthquakes gave rise to spread damage, often of irreversible nature, of remarkable masterpiece or less known object exhibited by museum. Preventive actions and strategies for reducing seismic vulnerability are employed without the necessary integration and programming. The issue is still a challenge for the scientific community. Several positive experience to reduce seismic risk for statues have been conducted thanks to the introduction of isolation systems. However, these remarkable achievements my not be repeated to a large scale due to cost involved and to very peculiar design adopted. The present research aims to propose an innovative seismic protection device suitable at a large scale to prevent overturning of statues or other assets exhibited inside museums. The device must be cheap and of moderate visual impact. The study will include the production of several prototypes to be tested on real cases and studied over seismic tables. The research will take advantage of the know-how acquired by different scientific area of the department and will exploit cooperation with other research institutes and industries operating in the filed of prototyping, sensor development and earthquake simulators. The aims of the research will favorably promote cooperation and new partnerships between the Department and Private or institutional Organization operating in the area of Locride, Piana di Gioa Tauro and Valli Tirreniche dei Peloritani. All these territories host museums and Cultural Heritage assets which can take benefit from the results the present research.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**

THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.5 "additional PhD scholarships on Green topics" Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C)**
Curriculum	**Urban Regeneration**
PhD scholarship title n. 3	**Towards the green and digital transition of local communities: Smart Villages and community-based regeneration for sustainable and resilient development**
Project description	The research proposal aims to analyze Smart Villages towards a strategic development approach for inner areas, which implies resilience and sustainability framed upon the principles of community-based urban regeneration. According to the Smart Village rationale, innovation and digitalization, sustainable mobility, protection and enhancement of natural ecosystems are central elements. The Smart Villages, thanks to the particular attention to innovation (new technologies, digitization, social innovation), represent one of the enabling factors of the new geography of innovation in which the flows and nodes of the urban-rural innovation network become engines of sustainable development through the regeneration mechanisms of inland areas. The theme of Smart Villages is part of both Mission 5 of the PNRR (Social Inclusion, interventions for Territorial Cohesion), and Missions 2 (Green Revolution and Ecological Transition - M2C2.5) and 4 (Education and Research - M4C2). The research activity focuses on bearing elements of the Smart Villages spatial configuration to identify those more representatives (e.g. Borgo of the Future, Borgo 4.0) that can be contextualized in pilot areas located in the province of Reggio Calabria and Messina. The final aim is the implication of community-based regeneration as a strategic approach for sustainable development focused on innovation-digitalization, social-territorial cohesion (mobility, services), and biodiversity.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.5 "additional PhD scholarships on Green topics" Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C)**
Curriculum	**Urban Regeneration**
PhD scholarship title n. 4	**Economic-estimative evaluations for innovative forms of management and enhancement of cultural heritage**
Project description	The project intends to structure a training course in applied research, within the SSD ICAR 22 – Estimo. The result expected is a figure able to develop, through the appropriate evaluation processes, innovative organizational and managemental models of the cultural heritage, material and intangible. These models meet the essential requirement of economic sustainability; they have to also be consistent with the most recent international guidelines on the management and enhancement of Heritage, such as those dictated by the Faro Convention. These models respond to the need to significantly improve the usability of the cultural heritage present in the areas close to the University, in order to strengthen their tourist-cultural attractiveness. Therefore, they can constitute a

	fundamental reference for the Public Administration and / or cultural and creative companies operating in this field. According to the consolidated methodologies, the path will be divided into a theoretical in-depth part, mainly of an economic-estimative nature, in terms of reference literature, formalized models and good practices, and an applicative-experimental part on nearby territories. (Area Grecanica, Locride, Piana di Gioia Tauro, Ionian valleys of the Peloritani). In particular, the research will aim to identify some possible alternative organizational and management models. The applicability of these models to the identified contexts will be evaluated on the basis of the criteria of feasibility, sustainability and effectiveness, measured in the three classical dimensions: environmental, social and economic, in particular with regard to potential impacts and expected results. The training course will also make use of multidisciplinary contributions, coming from SSDs connected with the topics covered, such as: the history of architecture, city and territory; the restoration and conservation of the Heritage; IT disciplines related to the use of digital technologies.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.5 "additional PhD scholarships on Green topics"** **Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C)**
Curriculum	**Architecture: Theory and Design**
PhD scholarship title n. 5	**Mediterranean Landscape in Emergency: natural and social habitat**
Project description	The research is part of the research activities of the UNESCO Chair 'Mediterranean Landscape in Context of Emergency' whose main goal is "to respond to contexts in crisis and in transition by activating direct support processes to local communities so that knowledge and governance of territorial and environmental phenomena connected to the relationship between man and habitat and between different cultures (Educational Agenda 2030 goals 4, 8, 11, 17)". Landscapes in emergency are those territories that host a large number of citizens seeking humanitarian protection and political asylum and that are hosted in inner areas for which they represent a resource in terms of repopulation and economic development. The research contextualized in the Valle del Patrì (Valle Tirrenica of Monti Peloritani), aims to address the theme of landscape design with the specific objective of biodiversity conservation as a fundamental element for the sustainable development of the territories to contribute to the growth of a culture of multi-ethnic identities and the sharing of places. It intends to combine the knowledge of natural ecological systems to create applications on the territory according with the local ecosystem, through the design of 'Green Infrastructures', bio-ecological corridors as elements of connection between the coastal, hilly and mountainous environment, to achieve goals relating social, environmental, economic, occupational habitat. The research plans to analyze the environmental context of the Valle del Patrì by analyzing specific habitats in order to identify elements of ecological-

	environmental value and areas with critical phenomena on which to focus interventions aimed at restoring the forest according with the ecological characteristics of the site. The rethinking of agricultural activities in the ecological-environmental triggers two important values: the use of the territory as a common good and making it a work practice. The habitat analysis will allow the definition of the Territorial Ecological Network which is the sustainability tool capable of providing useful guidelines for territorial management and planning, to maintain the ecological functionality of the landscape, to combat climate change. The research responds to the indications of the 'Nazionale del Verde Urbano' as it provides for actions aimed at increasing territorial connectivity to reduce the impacts from heat islands, intense rainfall and flood phenomena with consequent hydrogeological instability of the river valley.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**

FORM N. 2

PhD Programme	**Ingegneria dell'Informazione**
Cycle	**XXXVII**
Coordinator	Prof.ssa Antonella Molinaro
Department	Dipartimento di Ingegneria dell'Informazione, delle Infrastrutture e dell'Energia Sostenibile **(DIIES)**
Duration	3 years
PhD positions	**n. 5 scholarships:** - **n. 2 scholarships** funded by University based **on any research subject (modulo Allegato D);** - **n. 3 scholarships** within the thematic area Action IV.4 "additional PhD scholarships on Innovation topics" ***Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B);***
Public-private partnership	The public-private partnership related to the measure provided in the art. 2 of the MUR Decree of the 25th June 2021, n. 737, including the host company for the research period of 6 (min) -12 (max) months, provided for by the implementing regulations of the MUR Decree of the 10th August 2021, no. 1061, will be identified by the DIIES Department, on the proposal of the Doctorate Course Council.
Educational qualification required: academic disciplines list for Italian University research and teaching	LM-17 Fisica LM-18 Informatica LM-20 Ingegneria aerospaziale e astronautica LM-21 Ingegneria biomedica LM-22 Ingegneria chimica LM-23 Ingegneria civile LM-24 Ingegneria dei sistemi edilizi LM-25 Ingegneria dell'automazione LM-26 Ingegneria della sicurezza LM-27 Ingegneria delle telecomunicazioni LM-28 Ingegneria elettrica LM-29 Ingegneria elettronica

	LM-30 Ingegneria energetica e nucleare LM-31 Ingegneria gestionale LM-32 Ingegneria informatica LM-33 Ingegneria meccanica LM-34 Ingegneria navale LM-35 Ingegneria per l'ambiente e il territorio LM-40 Matematica LM-44 Modellistica matematico-fisica per l'ingegneria LM-53 Scienza e ingegneria dei materiali LM-54 Scienze chimiche LM-70 Scienze e tecnologie alimentari LM-71 Scienze e tecnologie della chimica industriale 20/S (specialistiche in fisica) 23/S (specialistiche in informatica) 25/S (specialistiche in ingegneria aerospaziale e astronautica) 26/S (specialistiche in ingegneria biomedica) 27/S (specialistiche in ingegneria chimica) 28/S (specialistiche in ingegneria civile) 29/S (specialistiche in ingegneria dell'automazione) 30/S (specialistiche in ingegneria delle telecomunicazioni) 31/S (specialistiche in ingegneria elettrica) 32/S (specialistiche in ingegneria elettronica) 33/S (specialistiche in ingegneria energetica e nucleare) 34/S (specialistiche in ingegneria gestionale) 35/S (specialistiche in ingegneria informatica) 36/S (specialistiche in ingegneria meccanica) 37/S (specialistiche in ingegneria navale) 38/S (specialistiche in ingegneria per l'ambiente e il territorio) 45/S (specialistiche in matematica) 50/S (specialistiche in modellistica matematico-fisica per l'ingegneria) 62/S (specialistiche in scienze chimiche) 81/S (specialistiche in scienze e tecnologie della chimica industriale) **For foreign candidates:** Equivalent degrees achieved abroad are also admissible.
Documentation to be attached to the application	• Application form for PhD programm, as given by online procedure, printed and signed; • a research proposal focused on the Action IV.4 "additional PhD scholarships on Innovation topics" ***"Azione IV.4 – "Dottorati e contratti di ricerca su tematiche dell'innovazione" (modulo Allegato B)*** or a "free-theme" research project in the case of scholarships funded by University **(modulo Allegato C)**; • curriculum Vitae (EU format); • payment receipt of the partecipation fee of 65,00 euros **(not refundable)**; • self-certification of the University degree in accordance with the D.P.R. 445 of the 28 december 2000;

	• photocopy of a valid document of identification signed by the candidate.
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**NESSUNO (modulo Allegato D)**
n. 1 e 2 Scholarship titles	**"free-theme" for each scholarships**
Training period abroad	**Up to 18 months**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.4 "additional PhD scholarships on Innovation topics" Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B)**
PhD scholarship title n. 3	**Electronically reconfigurable antennas for satellite and mobile communications**
Project description	The proposed research concerns the study, design, and development of innovative reconfigurable antennas that can dynamically direct the irradiated power into one or more desired spatial directions. This is an enabling technology that opens several possibilities in multiple fields, such as the new generation networks 5G / 6G, IoT, home and industrial automation, as well as in the "aerospace and defence" sector.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.4 "additional PhD scholarships on Innovation topics" Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B)**
PhD scholarship title n. 4	**Acronym: HEALEDPAV** **Title: Roads with extended life cycle through non-destructive rehabilitation.**
Project description	The project aims to develop methods and technologies for having roads with extended life cycle through non-destructive rehabilitation (HEALEDPAV) by the recycle of treated conductive wastes into bituminous mixtures (RSCOND). The research activities include preparatory actions, experiments in the laboratory, actions carried out in the company, data analyses and inferences.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.4 "additional PhD scholarships on Innovation topics" Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B)**

PhD scholarship title n. 5	**Innovative technologies and methodologies for the evolution of the national health system towards Health 4.0 through the management of Telemedicine services based on 5G/6G telecommunication systems**
Project description	The healthcare sector is one of the key verticals of future 6G . The project will consider some innovative technologies that emerged with 5G and that are considered enabling for 6G in the eHealth sector. Among these, the Internet of Things (IoT) and Multi-access Edge Computing (MEC) are well suited to be integrated into a cutting-edge architecture for telemedicine services that require low-latency data storage and processing. The application of the Internet of Medical Things (IoMT) paradigm to telemedicine systems deployed for the collection of health data will be deepened in order to: propose innovative network architectures, develop novel communication protocols, test their performance on cutting-edge devices.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**

FORM N. 3

PhD Programme	**Scienze Agrarie, Alimentari e Forestali**
Cycle	**XXXVII**
Curricula	1. **Scienze delle produzioni Agrarie** 2. **Scienze e Tecnologie Alimentari** 3. **Scienze Forestali**
Coordinator	Prof. Marco Poiana
Department	Dipartimento Agraria
Duration	3 anni
PhD positions	**n. 7 scholarships:** - **n. 1 scholarship** within the thematic area Action IV.4 "additional PhD scholarships on Innovation topics" ***Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B)*** - **n. 6 scholarships** within the thematic area Action IV.5 "additional PhD scholarships on Green topics" ***Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C)***;
Public-private partnership	The public-private partnership related to the measure provided in the art. 2 of the MUR Decree of the 25th June 2021, n. 737, including the host company for the research period of 6 (min) -12 (max) months, provided for by the implementing regulations of the MUR Decree of the 10th August 2021, no. 1061, will be identified by the Department of AGRARIA, on the proposal of the Doctorate Course Council.
Educational qualification required: academic disciplines list for Italian University	LM-3Architettura del paesaggio LM-4 Architettura e ingegneria edile-architettura LM-4 c.u. Architettura e ingegneria edile-architettura (quinquennale) LM-6 Biologia LM-7 Biotecnologie agrarie LM-8 Biotecnologie industriali LM-9 Biotecnologie mediche, veterinarie e farmaceutiche

research and teaching	LM-13 Farmacia e farmacia industriale LM-17 Fisica LM-18 Informatica LM-22 Ingegneria chimica LM-23 Ingegneria civile LM-24 Ingegneria dei sistemi edilizi LM-26 Ingegneria della sicurezza LM-27 Ingegneria delle telecomunicazioni LM-30 Ingegneria energetica e nucleare LM-31 Ingegneria gestionale LM-32 Ingegneria informatica LM-33 Ingegneria meccanica LM-35 Ingegneria per l'ambiente e il territorio LM-40 Matematica LM-41 Medicina e chirurgia LM-42 Medicina veterinaria LM-48 Pianificazione territoriale urbanistica e ambientale LM-49 Progettazione e gestione dei sistemi turistici LM-53 Scienza e ingegneria dei materiali LM-54 Scienze chimiche LM-56 Scienze dell'economia LM-60 Scienze della natura LM-61 Scienze della nutrizione umana LM-69 Scienze e tecnologie agrarie LM-70 Scienze e tecnologie alimentari LM-71 Scienze e tecnologie della chimica industriale LM-73 Scienze e tecnologie forestali ed ambientali LM-74 Scienze e tecnologie geologiche LM-75 Scienze e tecnologie per l'ambiente e il territorio LM-76 Scienze economiche per l'ambiente e la cultura LM-82 Scienze statistiche LM-86 Scienze zootecniche e tecnologie animali LM/GASTR Scienze economiche e sociali della gastronomia 3/S (specialistiche in architettura del paesaggio) 4/S (specialistiche in architettura e ingegneria edile) 6/S (specialistiche in biologia) 7/S (specialistiche in biotecnologie agrarie) 8/S (specialistiche in biotecnologie industriali) 9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) 14/S (specialistiche in farmacia e farmacia industriale) 20/S (specialistiche in fisica) 23/S (specialistiche in informatica) 27/S (specialistiche in ingegneria chimica) 28/S (specialistiche in ingegneria civile) 29/S (specialistiche in ingegneria dell'automazione) 34/S (specialistiche in ingegneria gestionale) 36/S (specialistiche in ingegneria meccanica) 38/S (specialistiche in ingegneria per l'ambiente e il territorio) 45/S (specialistiche in matematica)

	47/S (specialistiche in medicina veterinaria) 50/S (specialistiche in modellistica matematico-fisica per l'ingegneria) 61/S (specialistiche in scienza e ingegneria dei materiali) 62/S (specialistiche in scienze chimiche) 64/S (specialistiche in scienze dell'economia) 68/S (specialistiche in scienze della natura) 69/S (specialistiche in scienze della nutrizione umana) 74/S (specialistiche in scienze e gestione delle risorse rurali e forestali) 77/S (specialistiche in scienze e tecnologie agrarie) 78/S (specialistiche in scienze e tecnologie agroalimentari) 79/S (specialistiche in scienze e tecnologie agrozootecniche) 81/S (specialistiche in scienze e tecnologie della chimica industriale) 82/S (specialistiche in scienze e tecnologie per l'ambiente e il territorio) 83/S (specialistiche in scienze economiche per l'ambiente e la cultura) 84/S (specialistiche in scienze economico-aziendali) 85/S (specialistiche in scienze geofisiche) 86/S (specialistiche in scienze geologiche) 92/S (specialistiche in statistica per la ricerca sperimentale)
Documentazione da allegare	• Application form for PhD programm, as given by online procedure, printed and signed; • a research proposal focused on the Action IV.4 "additional PhD scholarships on Innovation topics" ***Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B)*** or on the Action IV.5 "additional PhD scholarships on Green topics" ***Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C)***; • curriculum Vitae (EU format); • payment receipt of the partecipation fee of 65,00 euros **(not refundable)**; • self-certification of the University degree in accordance with the D.P.R. 445 of the 28 december 2000; • photocopy of a valid document of identification signed by the candidate.
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.4 "additional PhD scholarships on Innovation topics" Azione IV.4 "Borse di Dottorato di ricerca aggiuntive su tematiche dell'innovazione" (modulo Allegato B)**
Curriculum	**3. Scienze Forestali**
PhD scholarship title n. 1	**Study of the forest - wood supply chain for the valorization of local wood resources in the rural area of the Plain of Gioia Tauro**
Project description	The valorization of rural areas can be achieved through the processes of innovation and qualification of typical local products and the development of wood products from the agro-forestry area of the Tyrrhenian side of Aspromonte (rural area of the Plain of Gioia Tauro) can contribute to this. The proposed research aims to support the companies of the Plain of Goia Tauro that operate both in the phases of transformation and forest harvesting, integrating the different segments of the "Forest - Wood" supply. The study is aimed to improve the wood product that accompanies it with valid innovations both in the production process and in the product. In particular, the wood-based products made in this area by the small but numerous

	sawmills and furniture companies would allow to promote the sustainable development of the Forest Wood Supply Chain. However, it is necessary to develop actions capable of qualifying resources and consolidating this production offering innovations, in order to be recognized and appreciated by the extra-regional market. Today, the many companies in the wood sector show a certain gap between finding the resource and its transformation and the strong structural weakness associated with a low level of innovation applied to both the process and the product is often noted. These difficulties lead to a lower growth of mountain and rural areas with the consequent loss of commercial value and a decrease in profitability of agro-forestry sectors. The concomitance of various factors with the weak interaction between demand from processing companies and the local wood supply has created a situation of profound criticality. Therefore, the proposed activity is focused on supporting the Forest-Wood Supply Chain in all segments to start new and more coherent innovation processes in the various production areas by introducing digital traceability (Blockchain) of wood assortments, new low-impact processes. In fact, the harvesting and processing of wood within the 33 municipalities of the Plain of Gioia Tauro is particularly articulated and rooted in their rural areas for reasons historically linked to the chain of cultivation, processing and finishing of wood. The project aims to start from the criticalities present within the production sector in order to accompany companies in a path of requalification and enhancement of the entire supply chain, necessary both for socio-economic development and for the protection and safeguarding of agro-forestry areal. The use of natural resources will be promoted, maintaining over time the different ecological conditions, as indicated by the policies of Innovation and BioEconomy.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.5 "additional PhD scholarships on Green topics"** **Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C);**
Curriculum	**3. Scienze Forestali**
PhD scholarship title n. 2	**Development of a methodology for the evaluation of the sediment balance at the mouth of watercourses and of the related shoreline evolution in the Mediterranean area by integrating erosion models** **Methods for the analysis and the quantification of the sediment balance at the mouth of water courses and the related dynamics of the proximity coasts through the integration of models for estimating erosion, transport and solid deposit at basin and coastal scale.**
Project description	Coastal evolution is the effect of sediment deposition and their mobilization by marine currents at the mouth of streams. An alteration of the sediment balance can lead to significant environmental problems (including marine ecosystems) and socio-economic impacts (especially in urban areas). However, the literature on the interpretation and modelling of coastal evolution is rather limited, also due to the lack of a cross-sectoral research approach. Moreover, watershed and coast systems are tendentially considered as two separate

	entities. Presently, despite some significant contributes, the attempts of integrate implementation of watershed and coastal model is quite limited, perhaps due to the lack of inter-sectorial research approach. In this regard, the activity is addressed to implement suitable operative approaches to couple and elaborate the results provided by watershed-coastal models, either existing or adaptable methodologies, for the combined estimation of sediment delivery amounts at the watershed mouth and sediments amounts redistributed by the sea action. We propose to develop, also through case studies, new methodologies to verify or predict coastal evolution near the mouth of streams, also under the expected climate change scenarios that could aggravate the problem. The case studies are represented by watersheds that underlie the valleys of the "Grecanica Area" (Calabria) and the Ionian "Peloritani" (Sicily) on the banks of the Strait of Messina and that often require hydraulic and forest restoration works (also with the use of innovative techniques and materials). The research, which appears to be consistent with the development trajectories of "systems for the safety of the urban environment, environmental monitoring and prevention of critical events or risk", "climate change, mitigation and adaptation", as well as "knowledge, technological innovation and sustainable management of marine ecosystems", could provide tools to support decision-making for the bodies responsible for the management of watersheds and coastal areas.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.5 "additional PhD scholarships on Green topics"** **Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C);**
Curriculum	**1. Scienze delle produzioni Agrarie** **2. Scienze e Tecnologie Alimentari**
PhD scholarship title n. 3	**The truffle supply chain in Calabria: production and marketing aspects**
Project description	Goal of the project. Study of the truffle supply chain in the suitable areas of Calabria: experimentation, with mycorrhized Mediterranean forest essences, establishment of controlled truffle fields for the production, dissemination and enhancement of Calabria truffles, knowledge of consumption and purchase preferences of consumers. Calabria is from the point of view of its geological origin very interesting in terms of the propensity for the cultivation of truffles, many areas have soils suitable for truffle cultivation, with high production potential. This project proposal leverages these potentials and aims to contribute to the economic effects in terms of income and employment in the sustainable use of the territories' forest resources. In particular, it has been widely ascertained by scientific studies that the presence of truffles represents an important green indicator in terms of soil healthiness and environmental sustainability. The repercussions for the territories are manifold: 1) create productive activities and reforestations capable of returning abandoned woods to the community for artificial plants or for the maintenance, recovery and improvement of

	existing natural truffle fields; 2) create supply chains related to the sustainable processing and transformation of truffles and gastronomy based on fresh / processed truffles, in order to reduce the abandonment of marginal areas and create employment; 3) promote adequate study and enhancement activities aimed at developing the fresh and transformed truffle supply chain; 4) encourage territorial marketing activities and the promotion of ecosystem services including agritourism, rural and forest tourism, which aim at the cultural and well-being aspects of the population through social farming and forest bathing activities. All this in consideration that truffle cultivation can represent an important tool for the development of the territory and contribute to the economic improvement of companies and farmers and a driving force for other activities.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.5 "additional PhD scholarships on Green topics"** **Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C);**
Curriculum	**1. Scienze delle produzioni Agrarie**
PhD scholarship title n. 4	**New eco-friendly bioinsecticides for agrobiodiversity and local production protection**
Project description	The indiscriminate and irrational use of synthetic pesticides and the growing awareness of their negative consequences on the environment and human health encouraged the various stakeholders to search and develop eco-sustainable green alternatives to synthetic pesticides. In this scenario, the development of eco-compatible methodologies for insect pest control is rising more and more interest from the various stakeholders, in the context of an ecological transition in the agri-food sector. The project will aims at the formulation, characterization and ecotoxicological evaluation of new bioinsecticides, considering both the aspects directly related to the protection of bergamot orchards, as well as the mitigation of the side effects towards non-target organisms. Bioinsecticide formulations will be developed by using active ingredients extracted from wild plants vegetating in the studied agroecosystem, as well as molecules, phytocomplexes and substances of natural origin available on the market; those kinds of substances, due to their physical and chemical characteristics, are not able to penetrate the fruit tissues, whereas they are effective against the target insect pests. The project should include both laboratory and field experiments targeting the key pest of bergamot. The impact of bioinsecticides on agrobiodiversity must be evaluated considering selected insect taxa usually used as biological indicators (pollinators, predators and parasitoids).
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**

THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.5 "additional PhD scholarships on Green topics"** **Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C);**
Curriculum	**1. Scienze delle produzioni Agrarie**
PhD scholarship title n. 5	**Eco-sustainable fertilizer production from agroindustrial wastes to recovery degraded area and safeguard biodiversity**
Project description	The doctoral project is focused on eco-sustainable processes in the green theme and has as its purpose the study, the degree in innovation and the testing of fertilizers deriving from agro-industrial waste. In particular, highly polluting by-products will be recycled professionally and at competitive transformation costs with the general objective of a training flow in a resource and / or fertilizers that are sustainable from a socio-economic-environmental point of view. Green fertilizer products and formulations will be formulated: - organic - a base of sulfur (coming from the desulphurization of gas and oil) - mixed (composted and non-composted waste biomass and sulfur). The research will make it possible to identify the optimal percentages of waste biomass to be composted or to be bound to sulfur-bentonite to produce amendments in the form of pellets for the completion of the fertility of desertified and degraded soils present in Calabria (case study "Grecanic area") and Sicily. These fertilizers can become the emblem of a circular economy, where the material can become a resource for the production of new green products for the promotion of sustainable development.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.5 "additional PhD scholarships on Green topics"** **Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C);**
Curriculum	**1. Scienze delle produzioni Agrarie**
PhD scholarship title n. 6	**Innovative strategies in ruminants feeding to improve product quality and reduce the environmental impact of farming**
Project description	The research will face the need, imposed by the ongoing climate changes, to develop "green" solutions also in the sector of ruminant feeding. The innovative solutions will aim at: 1) maintaining high production level while mitigating the environmental impact along the chain of the production considered; 2) reducing the competition between feed and food; 3) improving the health value of animal products. The proposed strategies will focus mainly on the re-use of agro-industrial by-product, the use of forage plants and alternative feed resources rich in bioactive compounds that may affect the metabolisms responsible for their accumulation in animal products and for the enteric methane production.The research themes embrace zootechnical sciences, "food security", the quality of products of animal origin (specifically ruminants) and the correlation between their consumption and human health. In addition, aspects related to the mitigation of the environmental impact and

	sustainability of production systems, pillars of the new Green Deal, PNRR and PNR are considered. The active involvement in the project of stakeholders who have a very high technical-practical "know-how" relating to the conduct of field and business activities (the partner company) and scientific activities guarantees the contamination and circulation of knowledge and skills between the production system and research, as well as the exploitation of results through the real application of the innovative solutions identified. Thanks to the ability to carry out project activities with all project stakeholders, the human resource involved represents the hub of the exchange between production companies and highly qualified research groups. This represents an added value not only in terms of completeness of the training of the human capital involved in the project, but also for the possibility of creating new research models aimed at creating value for a sustainable, inclusive and knowledge-driven society. Furthermore, the project will contribute to changing the paradigm on products obtained from ruminants. These, especially meat, are commonly considered negative for human health and their highly impacting production from an environmental point of view. On the contrary, at the end of the project the identified strategies will allow to obtain a new product with high added value, more respectful of the environment, and with improved chemical-nutritional characteristics, in line with the demands of society and consumers. The project therefore considers the priorities indicated by the Italian and European development plans and fully satisfies the required contamination of knowledge and integration between the various sectors of knowledge.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**
THEMATIC AREA as described in the art. 3, sub. 2 of the DM 1061 of the 10.8.2021)	**Action IV.5 "additional PhD scholarships on Green topics"** **Azione IV.5 "Borse di Dottorato di ricerca aggiuntive su tematiche green" (modulo Allegato C);**
Curriculum	**1. Scienze delle produzioni Agrarie**
PhD scholarship title n. 7	**Biodiversity conservation and sustainable use of the ethnobotanical cultural heritage**
Project description	The sustainable use of natural heritage represents a challenge for the future of inland rural areas, rich in these resources, often little known or poorly used, such as native plants: these have multiple potential uses, with significant application and employment prospects. The activities related to the collection, use and transformation of wild plants in the past constituted an important economic sector for rural areas. Over the span of a few decades, this heritage, originated in centuries of man's adaptation to his environment and refinements in the use of natural resources, will be irretrievably lost. Ethnobotanical research aims to collect information on the local uses of plants with methodology and scientific rigor so that they can be disseminated and made available as a basis for possible uses by strengthening economic activities with the resources present in the territory. Social transformations and the policy of enhancement and sustainable use of natural resources allow local products have an added value that makes them competitive on the market

	thanks to the traditional uses of plants. The ethnobotanical research activity takes on greater significance if carried out in marginal rural areas, where populations that still today preserve the traditional uses of plants reside, such as the Grecanic area on which the research activity will focus: this area, located in southern Calabria, is characterized by a strong cultural and anthropological identity and is configured as an enclave that has resisted global changes for several centuries. The inhabitants of this territory have preserved a unique cultural and linguistic heritage in the world that goes back to Magna Graecia, including the Grecanico language, still used today to identify the species of ethnobotanical interest used above all for food and aromatic purposes, but also for medicinal purposes and handicraft. In this area, the consumption of wild plant species, strongly rooted in the local culture, contributes to a healthy and balanced diet. The sustainable use of the ethnobotanical heritage is closely linked to various aspects that the project intends to carry out: acquisition of scientific knowledge relating to the ethnobotanical uses of plants in the Grecanic area; preparation of specialized technicians able to operate competently in the selection and harvesting of plants; involvement of farms in the production, packaging and marketing of species of ethnobotanical interest or their derivatives. In summary, the project aims to: a) identify new quality products to be used above all for food purposes or to flavor drinks and foods, based on the enhancement of ethnobotanical traditions, with high added value and responding to the needs of the nutraceutical, food, health market; b) develop harvesting, processing, growing and marketing protocols through the involvement of local farms. In addition to the benefits on a local scale, the project aims to promote the production and sale of products derived from the collection of wild plants on the national and European market and, ultimately, to protect and promote a sustainable use of the biodiversity that characterizes the Grecanic area by preserving its cultural and social values.
Training period in the company	**6 months (compulsory)**
Training period abroad	**Up to a maximum of 6 months to be held within the 31.12.2023**
Foreign language	**English**